ABSTRACT BOOK

Azadi Ka Amrit Mahotsav

XII IASTAM ORATION AND AWARD FUNCTION

International IASTAM Conclave 2022

on

Multi-Targeted Therapeutics in Unani and Ayurvedic Medicine & Food Supplement

July 29-30, 2022 | Convention Centre, Jamia Hamdard, New Delhi, India

***Organized by*:**

Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology)
Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research (NIRF Rank 1, Pharmacy Institute of India), JAMIA HAMDARD, NEW DELHI
www.jamiahamdard.edu

In association with

Indian Association for the Study of Traditional Asian Medicine (IASTAM)
Pune, India
www.iastamindia.org

SCIENTIFIC PROGRAM

3.30-5.30 PM	**Inauguration & Award Function, Hall 1: Convention Centre (Synergy Hall), Jamia Hamdard, New Delhi, 29TH JULY 2022**

- Chief Patron: Janab Hammad Ahmed, Chancellor, Jamia Hamdard
- Patron: Prof. M Afshar Alam, Vice Chancellor, Jamia Hamdard
- Chief Guest: Shri Shekhar Dutt, Former Governor, Chhattisgarh
- Guest of Honor: Prof Asim Ali Khan, Director General, CCRUM, Ministry of Ayush, Govt of India
- Guest of Honor: Dr Mukhtar A Qasmi, Advisor, Ministry of Ayush, Govt of India
- President IASTAM: Dr C K Katiyar, Chairman of IASTAM Conclave 2022
- Dean SUMER: Prof S M Arif Zaidi, Dean SUMER
- Immediate Past President IASTAM: Dr Narendra Bhat, Chairman Scientific Services IASTAM Conclave 2022
- Secretary General IASTAM: Dr Kirti Bhati
- Chairman Core Committee: Mr S S Akhter, Registrar, Jamia Hamdard
- Organizing Secretary: Dr Sayeed Ahmad, Coordinator: Centre of Excellence in Unani Medicine, SPER, Jamia Hamdard

TECHNICAL PROGRAM

DAY 1: 29TH JULY, 2022 (INAUGURATION, ORATION & AWARD FUNCTION)

2:30-3:30	**Registration (Convention Centre)**	
3.30-5.30	**Inauguration & Award Function, Hall 1: Convention Centre (Synergy Hall), Jamia Hamdard, New Delhi**	
5.30-6.00	**High Tea**	
6:00-7:30	**ORATIONS IASTAM (SYNERGY Hall: CC Hall 1)**	
	ORATORS	**CHAIRPERSONS**
	Oration 1: *IASTAM Pt. Shiv Sharma Oration for contribution to Promotion of Ayurveda* **Mrs Shailaja Chandra** *Former Chief Secretary, Govt of Delhi, New Delhi,* ***India***	**Dr Narendra Bhat** *Past President, Chairman, Scientific Services IASTAM, Pune, Maharashtra,* ***India***
	Oration 2: *IASTAM Zandu International Oration for Research contributions to Natural products* **Dr Liyaqat Ali** *Vice Chancellor, Bangladesh University of Health Sciences, Dhaka,* ***Bangladesh***	**Dr Pulok K Mukherjee** *Director, IBSD Imphal, Manipur,* ***India***
	Oration 3: *IASTAM Zandu International Oration for Research Contributions to Ayurvedic Products* **Dr Madhu Dikshit** *Former Director, CSIR, CDRI, Lucknow,* ***India***	**Dr M Afshar Alam** *Vice Chancellor, Jamia Hamdard, New Delhi,* ***India***
7:30-8:00	**Inaugural Dinner, hosted by Honourable Chancellor JH, Janab Hammad Ahmed**	
8:00	**Cultural Evening: QAWWALI MUNEER NIYAZI & GROUP**	

DAY 2: 30TH JULY, 2022 (SCIENTIFIC SESSIONS)

	Convention Centre Hall 1 (SYNERGY Hall)				
9.15-9:45	**WELCOME ADDRESS AND INTRODUCTION TO CONCLAVE**				
	CHAIRPERSON **Dr CK Katiyar,** *President, IASTAM, Pune, India* **Dr SM Arif Zaidi**, *Chairman, IASTAM, Conclave, 2022* **Dr Kirti Bhati,** *Secretary General, IASTAM, Pune, India*				
	SPEAKER **Dr Sayeed Ahmad,** *Organizing Secretary, IASTAM Conclave 2022* **Topic**: Multi Targeted Therapeutics in Unani and Ayurvedic Medicine & Food Supplement				
09:45-10:00	**HIGH TEA**				
	POSTER SESSION 1 PP 1 – PP 100 12:00-01.00				
10:00-12:30	**PL 1: Science of Synergy**	**PL 2: Science of Prakruti/ Mizaj/ Temperament**	**PL 3: Scientific Validation of Traditional Claims & Ethnopharmacology**	**Hakeem Abdul Hameed Young Researcher Award Presentations**	**Oral Presentations**
	CHAIRPERSONS: **Ms Amina Al Haidan** *Founder & Chairman, Lotus Academy, UAE* **Dr A Sherif** *AIIMS, New Delhi, India* **Dr Preeti Kothiyal,** *DBUU, Dehradun* **Prof Milind J Umekar** *President, APTI, India*	**CHAIRPERSONS:** **Dr Abdul Wadood** *NIUM, Bengaluru, India* **Dr Raisur Rehman** *AUTCH, Karol Bagh, New Delhi* **Dr MA Jafri** *JH, New Delhi, India* **Dr K Mruthunjaya** *JSS, Mysuru, India*	**CHAIRPERSONS:** **Dr S Akhtar Husain** *JMI, New Delhi, India* **Dr Mahmooduz Zafar** *JH, New Delhi, India* **Dr Vidhu Aeri** *JH, New Delhi, India* **Dr TK Mukherjee** *SFE, India*	**CHAIRPERSONS:** **Dr Zahid Ashraf** *JMI, New Delhi, India* **Dr Nasir A Siddiqui** *KSU, KSA* **Dr Khalid R Hakeem** *KAAU, KSA* **Dr Javed E Qadri** *AIIMS, New Delhi, India* **Dr Saleemullah Khan** *PA College, Mangalore, India*	**CHAIRPERSONS:** **Dr Kshipra Misra** *STE, Kolkata* **Dr S Raisuddin** *JH, New Delhi, India* **Dr M Husain** *JMI, New Delhi, India* **Dr M Mujeeb** *JH, New Delhi, India* **Dr Ajay K Sharma,** *DPSRU, New Delhi* **Dr Divya Vohra** *JH, New Delhi, India*
	Lecture 1: **Dr Mohammad Kamil** *Lotus Academy,* ***UAE*** **Topic**: Quality control of medicinal plants and herbal medicines- From Field to Firm"	Lecture 1: **Dr N Srikant** *CCRAS, Ministry of Ayush,* ***India*** **Topic**: Safety of ayurveda formulations: evidence-based approach	Lecture 1: **Dr Sanjay Tamoli** *Abhinav Health Care Products Pvt. Ltd, Mumbai,* ***India*** **Topic**: A new dimension to phyto-extracts, for better therapeutic value	**HAH 1- HAH 12** **HAH1:** Amit Kar **HAH2:** Ankur Kumar Tanwar **HAH3:** Asema Mahveen **HAH4:** Bisma Jan **HAH5:** Gaurav	**OP 1- OP 30** **OP1:** Abdul Muheem **OP2:** Araf Fatma **OP3:** Areeba Insaf **OP4:** Faris Al Toub **OP5:** Kamini

	Lecture 2: **Dr Mukhleshur Rehman** *University of East London, **UK*** **Topic**: How natural products could contribute to tackle the global challenges of antimicrobial resistance (AMR)	Lecture 2: **Dr Abdul Rauf** *AMU, **India*** Topic: Holistic approach of Unani medicine with special reference to drug temperament and its relevance in therapeutics	Lecture 2: **Dr Prakash Itankar** *Nagpur, **India*** **Topic**: Lok Swasthya Parampara conservation: A practical approach	**HAH6:** Mohammad Ibrahim **HAH7:** Mohd Nauman Saleem **HAH8:** Mohd. Usman **HAH9:** Nafaa Hasan Ali **HAH10:** Nazneen Aiman Siddiqui **HAH11:** Satish Khatal **HAH12:** Satyendra Kumar	**OP6:** Md Afroz Ahmad **OP7:** Md. Wasi Akhtar **OP8:** Moayad Mustafa Hejazi **OP9:** Mohammed Kaleem **OP10:** Mohd. Vaseem Ismail **OP11:** Monalisha Samal **OP12:** Nikhila Shekhar **OP13:** Noor Fatima **OP14:** Parakh Basist **OP15:** Preeti Biswas **OP16:** Rabia Aziz **OP17:** Rabia Khan **OP18:** Rebanta Roy **OP19:** Ritu Rani **OP20:** Rizwan Ahmad **OP21:** Rustam Ekbbal **OP22:** Saiema Ahmedi **OP23:** Sakshee Sharma **OP24:** Seema Rani **OP25:** Sharmila Dusi **OP26:** Shruti Mathur **OP27:** Srishti Johri **OP28:** Supriya Sharma **OP29:** Sweety Parmar **OP30:** Vaishali Yadav **OP31:** Varsha Srivastava
	Lecture 3: **Dr Sitesh Bachar** *University of Dhaka, **Bangladesh*** **Topic**: Bangladeshi medicinal plants and their bioactive metabolites against SARS-CoV-2, HIV, and HBV	Lecture 3: **Dr Ghulamuddin Sofi** *NIUM, Bangalore, **India*** **Topic**: Assessment of *Mizaje Advia* of Unani drugs	Lecture 3: **Dr Rahul Singh** *Emami India, Ltd, Kolkata, **India*** **Topic**: Herbal drug standardization and recent advances		
	Lecture 4: **Dr D Chattopadhyay** *ICMR, Belgavi, **India*** **Topic**: Phyto-antimicrobials and its application potential in infections	Lecture 4: **Dr N Zaheer Ahmed** *CCRUM, Chennai, **India*** **Topic:** Concept of Mizaj with reference to contemporary sciences and its relevance	Lecture 4: **Dr Pramod H J** *KLE, Belgaum, **India*** **Topic**: Holistic health care practices & approaches by the traditional healers from Western Ghats region of karnataka.		
	Panel Discussion **Topic:** ***Need of Synergy based scientific studies for scientific validation of traditional claims of formulations.*** **PANELIST:** **Dr Liaquat Ali** *Dhaka, Bangladesh* **Dr Madhu Dikshit** *Lucknow, India* **Dr SK Maulik** *AIIMS, New Delhi, India* **Dr Arun Gupta** *Ayu Swasth, Pvt Ltd, Faridabad* **Dr S Shakir Jamil** *JH, New Delhi*	**Panel Discussion** **Topic:** ***Need for development of suitable pharmacological models for determination of temperament/ prakruti of drugs.*** **PANELIST:** **Dr Surender Singh** *AIIMS, New Delhi, India* **Dr M Shahid** *CSU, Chicago, USA* **Dr M Idris** *AUTCH, Karol Bagh, New Delhi* **Dr Abdul Latif** *AMU, Aligarh*	**Panel Discussion** **Topic:** ***Status and scope of research on scientific validation of traditional claims of Unani and Ayurvedic formulations in India and way forward.*** **PANELIST:** **Dr Geetha Krishnan** *WHO, Geneva* **Dr Atmaram Pawar** *Pune, India* **Dr Deepika Gunwant** *QCI, India* **Dr Rajesh Singh Pawar** *Bhopal, MP, India*		

12:30-1:30	LUNCH & AYUSH HEALTH MELA/ EXHIBITION VISIT				
	POSTER SESSION 2 PP 101- PP 180 3:00-4:00				
1:30-4:00	**PL 4: Multi-targeted therapeutics**	**PL 5: Science of Shodhana/Detoxification**	**PL 6: Functional foods & Nutraceuticals/AYUSH Aahaar**	**Short Lectures**	**Special Session on Unani Medicine by UDMA**
	CHAIRPERSONS: **Dr S C Mandal** *SFE, India* **Dr Sarwar Alam** *JH, New Delhi, India* **Dr Arunabha Ray** *JH, New Delhi, India* **Dr Shahid Umar** *JH, New Delhi, India*	**CHAIRPERSONS:** **Dr Raghavendra Rao M** *CCRYN, New Delhi, India* **Dr Rakesh Sharma** *NCISM, New Delhi* **Dr TO Siddiqui** *JH, New Delhi, India* **Dr Shoor Vir Singh** *GLA University, Mathura*	**CHAIRPERSONS:** **Dr Farhan J Ahmad,** *JH, New Delhi, India* **Dr MZ Abdin** *JH, New Delhi, India* **Dr Suhail Fatima** *JH, New Delhi, India* **Dr M Aslam** *JH, New Delhi, India*	**CHAIRPERSONS:** **Dr SR Wakode** *DPSRU, New Delhi, India* **Dr Abul Kalam Najmi** *JH, New Delhi, India* **Dr Iqbal Alam** *JH, New Delhi, India* **Dr Mohd Akram** *JH, New Delhi, India* **Dr Suhail Parvez** *JH, New Delhi, India*	**CHAIRPERSONS:** **Mr Mohd Arif** **Mr Maqbool Hasan** **Mr Syed Muneer Azmat** **Mr Pervaiz Ahmad Khan** **Dr Matiullah Majeed Mr Mohammad Jalees** **Mr Nabeel Anwar** **Mr Mohammad Naushad**
	Lecture 1: **Dr Sanjay Sharma** *Hindustan Unilever, India* **Topic**: Evolving regulations for ayurvedic plant-based wellness products	Lecture 1: **Dr PK Prajapati** *PCIM, Ministry of Ayush, India* **Topic**: *Shodhana* in Ayurvedic pharmaceutics w.s.r to Detoxification	Lecture 1: **Dr Ranjan Mitra** *Dabur India, Ltd, India* **Topic**: Overview on the analytical tools for quality control of natural product-based supplements	**SL1- SL 22** **SL1:** Adil Ahmad **SL2:** Ahmad Ali **SL3:** Bushra Parveen **SL4:** Harjeet Singh **SL5:** Hifzur R Siddique **SL6:** Mohammad Ahmed Khan **SL7:** Nanaocha Sharma **SL8:** Narayan Jadhav **SL9:** Nasir A. Siddiqui **SL10:** Prasoon Gupta **SL11:** Rabea Parveen **SL12:** S.G. Vishnu Sathya **SL13:** Saba Khan	**Dr Mohd Zulkifle** *NIUM, Bangalore, India* **Topic**: Mizaj and its understanding **Dr S Shakir Jamil** *JH, New Delhi, India* **Topic**: Principles of treatment in Unani Medicine for newly emerging dissorders
	Lecture 2: **Dr Sanjay Jachak** *NIPER, Mohali, Chandigarh, India* **Topic**: Indian Medicinal Plants as a Source of Anti-inflammatory Agents	Lecture 2: **Dr Rajiva Kumar Rai** *Dabur India, Ltd, India* **Topic**: Shodhana and It's Pharmaceutical Relevance	Lecture 2: **Dr L Satyanarayan** *Bhartiya Vidyapeeth, Pune, India* **Topic**: Research potential of Herb - drug Interaction		
	Lecture 3: **Dr IP Singh** *NIPER, Mohali, Chandigarh,* ***India***	Lecture 3: **Dr Anil Kumar Sharma**	Lecture 3: **Dr Mamta Prajapati** *FICSI,* ***India***		

	Topic: Quantitative NMR: Analysis of Essential oils	*AIMIL Pharmaceuticals, **India*** **Topic**: Concept of multi-targeted therapeutics approach in ayurvedic health system	**Topic**: Nutraceutical: Bridging the gap between Food & Medicine	**SL14:** Sana Rehman **SL15:** Sanjay Kumar Sinha **SL16:** Shahid Shah Chaudhary **SL17:** Siraj Anwar **SL18:** Suhail Muzaffar Bhat **SL19:** Suruchi Singh **SL20:** Umar Jahangir **SL21:** Vijay Kothari **SL22:** Vikas Dubey **SL23:** Yasheshwar	
	Lecture 4: **Dr Ghazala Javed** *CCRUM, New Delhi, **India*** **Topic**: Integration of Unani Medicine in Healthcare delivery system	Lecture 4: **Dr Bidhan Mahajon** *CCRAS, New Delhi, **India*** **Topic**: Insight of *Shodhana* (detoxification or purification process) poisonous drugs in Ayurveda: A scientific appraisal	Lecture 4: **Dr M Tanveer Alam** *IIP, Mumbai, **India*** **Topic**: Packaging Prospective of Ayurvedic and Functional Foods		
	Panel discussion topic: *Multi-targeted / multi-mechanistic treatment approach of Ayush: need of scientific validation* **PANELIST:** **Dr Abhimanyu Kumar** *Jodhpur, India* **Dr Pradeep Vaishnav** *Nadiyad, Gujrat, India* **Dr Gopi Krishna** *Karnataka, India* **Dr Prasoon Gupta** *IIIM, Jammu, India* **Dr Shibli Jameel** *SPER, JH*	**Panel discussion topic: *Do we need to develop a uniform method for detoxification of drugs mentioned in different systems of Ayush?*** **PANELIST:** **Dr NN Mehrotra** *CDRI, Lucknow* **Dr Kirti Bhati** *BVDU, Pune* **Dr Pushpahas Ballal** *FDA, India* **Mr Mohsin Dehlvi** *Dehlvi Remedies, India*	**Panel discussion topic: *Wide dimensions of Ayush Aahaar and way forward*** **PANELIST:** **Dr Sunil Kumar Joshi** *Dehradun, India* **Dr PK Jaiswal** *FSSAI, India* **Dr Vikas Babu** *IIIM, Jammu, India* **Dr Amitava Das** *SFE, India* **Dr Shahid Karim** *KSA*		
4:00-5:00	**Keynote**				
	CHAIRPERSONS **Dr CK Katiyar,** *CEO, Emami & President, IASTAM, Pune, India* **Dr Muhammad Iqbal,** *JH, New Delhi, India*				
	Dr R K Goyal, *DPSRU, New Delhi, India* **Dr Narendra Bhat,** *IASTAM, Pune, Maharashtra, **India***				
5:00-6:30	**Valedictory Session (Poster Awards, Oral Awards & Felicitations)**				
6:30	**HIGH TEA**				

Poster Presentation Sessions (30th July 2022)	
POSTER SESSION I (9:30 - 01:00), PP 1 – PP 100	
Chairpersons: **Dr Jamal Akhtar,** *CCRUM, New Delhi* **Dr Ahmad Ali,** *University of Mumbai, Mumbai* **Dr Pradeep Bhardwaj,** *IBSD, Imphal, Manipur* **Dr Mahaveer Dhobi,** *DPSRU, New Delhi, India* **Dr Sashi Bhushan,** *Dabur India, Ltd, India* **Mrs Manju Vyas,** *DPSRU* **Dr Siraj Anwar,** *GD Goenka, Gurugram* **Dr Suhail Bhat**, *Sun Pharma* **Dr Asjad Nabi Khan Sherwani**, *Sun Pharma* **Dr Umar Jahangir,** *SUMER, JH* **Dr Shabbir Ahmad,** *AUTCH* **Dr Dipti Pandita,** *DPSRU* **Dr Mukesh Nandave,** *DPSRU* **Dr Asif Husain**, *JH, New Delhi* **Dr M Samim**, *JH, New Delhi*	
Poster set up	**09:30 - 10:00**
Poster viewings and Authors present	**12:00 - 12:40**
Poster removal	**12:50**
Certificate distribution	**12:50 - 01:00**
POSTER SESSION II (01:30 - 04:00) PP 101 – PP 180	
Chairpersons: **Dr Nanocha Sharma,** *IBSD, Imphal, Manipur* **Dr Shahid Chaudhary,** *SUMER, Jamia Hamdard* **Dr Amit Kar,** *IBSD, Imphal, Manipur* **Dr Alok Pal Jain,** *Bhopal, MP, India* ***Dr Ayesha Raza,*** *AUTCH* **Mr Md Iftekhar,** *Hamdard Laboratories* **Dr Saima Amin,** *SPER, Jamia Hamdard* **Dr Perwez Alam**, *KSU, KSA* **Dr Nafees Haider,** *KSU, KSA* **Dr Maqsood Alam**, *KSU, KSA* **Dr Rizwan Ahmad**, *Azad Institute, Lucknow* **Dr Uzma Bano,** *SUMER, Jamia Hamdard* **Dr M Usman,** *SUMER, Jamia Hamdard* **Dr Ozair Alam,** *SPER, Jamia Hamdard*	
Poster set up	**01:30 - 02:00**
Poster viewings and Authors present	**03:00 - 03:40**
Poster removal	**03:50**
Certificate distribution	**03:50 - 04:00**

5.00-6.30	Valedictory Session (Poster Awards, Oral Awards & Felicitations), 30TH JULY 2022, SYNERGY HALL (HALL 1 OF CONVENTION CENTER

- Patron: Prof. M Afshar Alam, Vice Chancellor, Jamia Hamdard
- President IASTAM: Dr C K Katiyar, Chairman of IASTAM Conclave 2022
- Dean SUMER: Prof S M Arif Zaidi, Dean SUMER
- Immediate Past President IASTAM: Dr Narendra Bhat, Chairman Scientific Services IASTAM Conclave 2022
- Secretary General IASTAM: Dr Kirti Bhati
- Chairman Core Committee: Mr S S Akhter, Registrar, Jamia Hamdard
- Organizing Secretary: Dr Sayeed Ahmad, Coordinator: Centre of Excellence in Unani Medicine, SPER, Jamia Hamdard

Scientific Hall Coordinators

Day 1 (29th July 2022)
HALL 1: Convention Centre (Synergy HALL, Inauguration Session)
Dr Zeenat Iqbal, ***SPER, Jamia Hamdard***
Dr Seema Rani, ***SNSAH, Jamia Hamdard***
Dr Rabea Parveen, ***SPER, Jamia Hamdard***
Dr Bushra Parveen, ***SPER, Jamia Hamdard***
Varsha Shrivastava, ***BNPL, Jamia Hamdard***
Zoya Malik, ***BNPL, Jamia Hamdard***
Bisma Jan, ***BNPL, Jamia Hamdard***
HALL 1: Convention Centre (Synergy HALL, Oration Session)
Dr Zeenat Iqbal, ***SPER, Jamia Hamdard***
Dr Seema Rani, ***SNSAH, Jamia Hamdard***
Dr Rabea Parveen, ***SPER, Jamia Hamdard***
Dr Bushra Parveen, ***SPER, Jamia Hamdard***
Areeba Insaf, ***BNPL, Jamia Hamdard***
Monalisha Samal, ***BNPL, Jamia Hamdard***
Muzayyana Khan, ***BNPL, Jamia Hamdard***
Day 2 (30th July 2022)
HALL 1: Convention Centre (Synergy HALL, Guest Lecture Session)
Dr Sanjula Baboota, ***SPER, Jamia Hamdard***
Parakh Basist, ***BNPL, Jamia Hamdard***
Niharika Singh, ***BNPL, Jamia Hamdard***
Anuradha Shee, ***BNPL, Jamia Hamdard***
HALL 1: Convention Centre (Synergy HALL, Science of Synergy Session)
Dr Selva Pandiyan, ***SIST, Jamia Hamdard***
Dr Aamir Mirza***, SPER, Jamia Hamdard***
Ms Astha Bhardwaj, ***SIST, Jamia Hamdard***
Dr Yasheshwar Singh, ***DU, New Delhi***
Varsha Shrivastava, ***BNPL, Jamia Hamdard***
Zoya Malik, ***BNPL, Jamia Hamdard***
Sultan Zahiruddin, ***BNPL, Jamia Hamdard***
Mohd Umar, ***BNPL, Jamia Hamdard***
HALL 1: Convention Centre (Synergy HALL, Multi-targeted therapeutics, Session)
Dr Anuja Krishnan***, SPER, Jamia Hamdard***
Dr Khalid Basheir, ***SIST, Jamia Hamdard***
Dr Madhukar Garg, ***Chitkara University, Punjab***
Zoya Malik, ***BNPL, Jamia Hamdard***
Varsha Shrivastava, ***BNPL, Jamia Hamdard***
Sultan Zahiruddin, ***BNPL, Jamia Hamdard***
Mohd Umar, ***BNPL, Jamia Hamdard***
Parakh Basist, ***BNPL, Jamia Hamdard***
HALL 1: Convention Centre (Synergy HALL, Keynote Session)
Dr M Shaharyar, ***SPER, Jamia Hamdard***
Dr M Sohrab, ***SNSAH, Jamia Hamdard***
Dr M Akhtar, ***SPER, Jamia Hamdard***
Varsha Shrivastava, ***BNPL, Jamia Hamdard***
Areeba Insaf, ***BNPL, Jamia Hamdard***
Parakh Basist, ***BNPL, Jamia Hamdard***
Bisma Jan, ***BNPL, Jamia Hamdard***

HALL 1: Convention Centre (Synergy HALL, Valedictory Session)
Dr Zeenat Iqbal, ***SPER, Jamia Hamdard*** Dr Seema Rani, ***SNSAH, Jamia Hamdard*** Dr Rabea Parveen, ***SPER, Jamia Hamdard*** Dr Bushra Parveen, ***SPER, Jamia Hamdard*** Monalisha Samal, ***BNPL, Jamia Hamdard*** Areeba Insaf, ***BNPL, Jamia Hamdard*** Parakh Basist, ***BNPL, Jamia Hamdard*** Bisma Jan, ***BNPL, Jamia Hamdard***
HALL 2: Convention Centre (Temperament HALL, Science of Prakurti/ Mizaj/ Temperament, Session)
Dr Minhaj Ahmed, ***SUMER, Jamia Hamdard*** Dr Vasudha Sharma, ***SIST, Jamia Hamdard*** Dr Abida Parveen, ***Novartis, Hyderabad*** Dr Saba Khan, ***SPER, Jamia Hamdard*** Monalisha Samal, ***BNPL, Jamia Hamdard*** Niharika Singh, ***BNPL, Jamia Hamdard*** Aftab Alam, ***BNPL, Jamia Hamdard***
HALL 2: Convention Centre (Temperament HALL, Science of Shodhana/Detoxification, Session)
Dr Hifzul Kabir, ***SUMER, Jamia Hamdard*** Dr Foziyah Zakir, ***DPSRU, New Delhi*** Dr Shazia Jilani, ***SUMER, Jamia Hamdard*** Dr Rajesh Kumar, ***Dabur, India Ltd.*** Niharika Singh, ***BNPL, Jamia Hamdard*** Monalisha Samal, ***BNPL, Jamia Hamdard*** Aftab Alam, ***BNPL, Jamia Hamdard***
HALL 3: CCR LT-5 (Aahaar HALL, Scientific Validation of Traditional Claims & Ethnopharmacology)
Dr Javed Ali, ***SPER, Jamia Hamdard*** Dr Suruchi Singh, ***SPER, Jamia Hamdard*** Dr Ruhi Ali, ***DPSRU, New Delhi*** Dr Jinku Bora, ***SIST, Jamia Hamdard*** Areeba Insaf, ***BNPL, Jamia Hamdard*** Muzayyana Khan, ***BNPL, Jamia Hamdard*** Rustam Iqbal, ***BNPL, Jamia Hamdard*** Mohd Irfan, ***BNPL, Jamia Hamdard***
HALL 3: CCR LT-5 (Aahaar HALL, Functional foods & Nutraceuticals/AYUSH Aahaar)
Dr Shoukat R Mir, ***SPER, Jamia Hamdard*** Dr M Akhtar, ***SPER, Jamia Hamdard*** Dr Mohd Aqil, ***SPER, Jamia Hamdard*** Dr Gaurav Jain, ***DPSRU, New Delhi*** Muzayyana Khan, ***BNPL, Jamia Hamdard*** Areeba Insaf, ***BNPL, Jamia Hamdard*** Rustam Iqbal, ***BNPL, Jamia Hamdard*** Mohd Irfan, ***BNPL, Jamia Hamdard***
HALL 4: CCR LT-12 (HAH AWARD HALL, Hakeem Abdul Hameed Young Researcher Award Presentations)
Dr Shaqiquz Zaman, ***SPER, Jamia Hamdard*** Dr Md Mairaj Ansari, ***SCLS, Jamia Hamdard*** Dr M Ahmad Khan, ***SPER, Jamia Hamdard*** Dr M Ibrahim, ***AHP, Pvt Ltd, Mumbai*** Bisma Jan, ***BNPL, Jamia Hamdard*** Anuradha Shee, ***BNPL, Jamia Hamdard*** Gaurav, ***BNPL, Jamia Hamdard***

HALL 4: CCR LT-12 (HAH AWARD HALL, Short Lecture Session)
Dr BP Panda, ***SPER, Jamia Hamdard*** Dr Qulsum Jan, ***SIST, Jamia Hamdard*** Dr M Akhtar, ***SPER, Jamia Hamdard*** Dr M Shafi, ***SCLS, Jamia Hamdard*** Bisma Jan, ***BNPL, Jamia Hamdard*** Anuradha Shee, ***BNPL, Jamia Hamdard*** Gaurav, ***BNPL, Jamia Hamdard***
HALL 5: CCR LT 13 (UDMA HALL)
Dr Mumtaz Alam, ***SPER, Jamia Hamdard*** Dr Kamal YT, ***KSA*** Dr Shahana Salam, ***KSA*** Dr Kailash Chandra, ***SPER, Jamia Hamdard*** Dr Masood Shah Khan, ***RB, Gurgaon*** Parakh Basist, ***BNPL, Jamia Hamdard*** Anil Kumar Saini, ***BNPL, Jamia Hamdard*** Vijay Kumar, ***BNPL, Jamia Hamdard***
HALL 5: CCR LT 13 (UDMA HALL)
Dr Anwar Husain, ***SUMER, Jamia Hamdard*** Dr Azhar Jabin, ***SUMER, Jamia Hamdard*** Dr Md Anzar Alam, ***SUMER, Jamia Hamdard*** Noman Anwar, ***Chennai*** Md Ijhar, ***BNPL, Jamia Hamdard*** Abdur Rehman, ***BNPL, Jamia Hamdard***
POSTER SESSION
Dr Rabea Parveen, ***SPER, Jamia Hamdard*** Dr Karishma Chester, ***RB, Gurgaon*** Dr Soumi Datta, ***Dabur, Ghaziabad*** Dr Adil Ahamed, ***SPER, Jamia Hamdard*** Dr Md Afroz Ahmad, ***SPER, Jamia Hamdard*** Dr Md Rafi, ***SPER, Jamia Hamdard*** Sageer Abass, ***BNPL, Jamia Hamdard*** Naveen K Reddy, ***BNPL, Jamia Hamdard***

Prof. (Dr.) M. Afshar Alam
Vice Chancellor

Jamia Hamdard
(Deemed to be University), 'A' Category-NAAC
Recommended as an "Institution of Eminence" (IoE)
Hamdard Nagar, New Delhi - 110 062, India
Tel: +91-11-26059662, +91-11-26059688
Email: vc@jamiahamdard.ac.in
aalam@jamiahamdard.ac.in
Website: www.jamiahamdard.edu

JH/VCO/2022
Dated: 26.07.2022

MESSAGE

I am delighted to know that the 12th Indian Association for the Study of Traditional Asian Medicine Oration and Award Function and "*International Conclave on Multi-targeted therapeutics in Unani and Ayurvedic Medicine & Food Supplement*" is being organised by Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), School of Pharmaceutical Education and Research, during July 29-30, 2022 at Jamia Hamdard, New Delhi

This Conclave will focus on "*Traditional Indian Medicine especially Unani, Ayurveda, their products and raw materials including Ethnopharmacology in development of scientifically validated quality products from medicinal plants and their regulatory aspects*". It will highlight several crucial and contemporary issues of Ayush (especially Ayurveda, Yoga, Unani and Siddha) and Indian Medicinal Plant Research. This event is an earnest attempt to bring together eminent scientists, teachers, practitioners, researchers, manufacturers, traditional healers and students related to AYUSH, Traditional Medicine, Pharmacy and biological sciences from different corners of our country and abroad.

I am also delighted to know that this International Conclave will witness the presence of more than 100 renowned speakers from India and many other countries including, USA, UK, Russia, UAE, KSA, Bangladesh, Nepal, Iran etc. and above our 1000 delegates from India and abroad. Further, exhibitions of various Unani and Ayurvedic medicine manufacturers as well as a Health Mela with various AYUSH clinics showcasing the Indian System of Medicine, will also be organized, which will be open for general public during all two days.

I congratulate all the highly renowned awardees of the ceremony being felicitated and it is my pleasure to welcome all the renowned speakers from India and abroad and other scientific community participating in this two days event on Traditional Medicine.

I congratulate the Organizing Committee and wish the conference a grand success.

M Afshar Alam
Prof. (Dr.) M Afshar Alam
Vice Chancellor

INDIAN ASSOCIATION FOR THE STUDY OF TRADITIONAL ASIAN MEDICINE
(IASTAM - India)
पारंपारिक आशियाई स्वास्थ्य परिषद – भारत
'Connecting Systems; Bridging Disciplines'
C/o, Principal, Bharati Vidyapeeth Deemed University, College of Ayurved, Pune - Satara Road, Dhankawadi, Pune - 411043
Email: iastam.india@gmail.com, Website: www.iastamindia.org, Tel: 020 - 24373954, Mob: 9860085980

Message from President IASTAM

I am pleased to note that the 12th Indian Association for the Study of Traditional Asian Medicine Oration and Award Function and "International Conclave on Multi-targeted therapeutics in Unani and Ayurvedic Medicine & Food Supplement" is being organised by Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi during **July 29-30, 2022.**

This Conclave will focus on "Traditional Indian Medicine especially Unani, Ayurveda, their products and raw materials including Ethnopharmacology in development of scientifically validated quality products from medicinal plants and their regulatory aspects". It will highlight several crucial and contemporary issues of Ayush (especially Ayurveda, Yoga, Unani and Siddha) and Indian Medicinal Plant Research. This event is an earnest attempt to bring together eminent scientists, teachers, practitioners, researchers, manufacturers, traditional healers and students related to AYUSH, Traditional Medicine, Pharmacy and biological sciences from different corners of our country and abroad.

Jamia Hamdard, an outstanding institution of higher learning with distinct and focused academic programs, has recently been recognized as Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology) and as Institution of Eminence by the Govt of India. The School of Pharmaceutical Education and Research (SPER) at Jamia Hamdard is one of the oldest and most reputed Pharmacy Institutes of India and has been ranked #1 amongst the Pharmacy Schools of the country (NIRF, Ministry of HRD, Govt. of India).

This International Conclave will witness the presence of more than 100 renowned speakers from India and many other countries including, USA, UK, Russia, UAE, KSA, Bangladesh, Nepal, Iran etc and above our 1000 delegates from India and abroad. The program will consist of about three orations, three keynote speeches and above 24 Plenary lectures from renowned scientists, more than 30 Short lectures and 12 HAH Award lectures from young scientists. Moreover, nearly 30 oral presentations and above 220 poster presentations will be made by young researchers, scholars and Post-Doc fellows from all across the World.
Exhibitions of various Unani and Ayurvedic medicine manufacturers as well as a Health Mela with various AYUSH clinics showcasing the Indian System of Medicine. I am pleased to congratulate all the awardees of the program being felicitated.
Further, it's my pleasure to welcome all the renowned speakers from India and abroad and other scientific community participating in two days event on Traditional Medicine.

I congratulate the organisers and wish the conference a grand success.

Dr CK Katiyar

XII IASTAM ORATION & AWARD FUNCTION - 2022

Indian Association for the Study of Traditional Asian Medicine, India

Centre of Excellence in Unani Medicine (Pharmacognosy & Pharmacology)

Bioactive Natural Product Laboratory

IASTAM CONCLAVE 2022
JAMIA HAMDARD, NEW DELHI, INDIA
JULY 27 - 30 , 2022

MULTI-TARGETED THERAPEUTICS IN UNANI AND AYURVEDIC MEDICINE & FOOD SUPPLEMENT

25/07/2022

Message

The 12th Indian Association for the Study of Traditional Asian Medicine Oration and Award Function and "International Conclave on Multi-targeted therapeutics in Unani and Ayurvedic Medicine & Food Supplement" is being organised by Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi during **July 29-30, 2022.**

This Conclave will focus on "Traditional Indian Medicine especially Unani, Ayurveda, their products and raw materials including Ethnopharmacology in development of scientifically validated quality products from medicinal plants and their regulatory aspects". It will highlight several crucial and contemporary issues of Ayush (especially Ayurveda, Yoga, Unani and Siddha) and Indian Medicinal Plant Research. This event is an earnest attempt to bring together eminent scientists, teachers, practitioners, researchers, manufacturers, traditional healers and students related to AYUSH, Traditional Medicine, Pharmacy and biological sciences from different corners of our country and abroad.

I would like to convey my warm welcome to you all for the 12th IASTAM International Conclave on Multi-targeted therapeutics in Unani and Ayurvedic Medicine & Food Supplement. This will provide an ideal platform to the participants to present their research work, interact, debate and disseminate ideas amongst the distinguished professionals, eminent scientists, technologist, industrialist and traditional health care professionals.

I would like to thank all the participants for their participation and interest to make this event successful. I wish you all a very effective scientific interaction during this program. I convey my sincere thanks to the Ministry of AYUSH, Govt of India, for granting Centre of Excellence Project under Unani Medicine (Pharmacognosy and Pharmacology and Other agencies such as Hamdard Laboratories India (Food Division), UDMA, IASTAM, India, Dabur India Ltd etc who have played major role in making grand success of this event. However, many more sponsors have played their role in contributing generously for the conference. I am privileged to have mentor like Dr CK Katiyar and Dr Narendra Bhat without their guidance and support it was really impossible. I gratefully acknowledge the service rendered by the organizing committee members such as my wife Dr Rabea Parveen, Dr Kirti Bhati, Prof Mumtaz Alam, Dr Mohammad Ahmad Khan, Mr Mohd Naushad, Mr Jalees, Mr Muneer Azmat, Dr Kailash Chandra, Mr Zakir Ahmad, Dr Bushra Parveen, Mr Vikas, Mr Raju and my beloved research scholars, my fellow faculty members, supporting staffs and student volunteers for their active support in organizing this Congress. Lastly, I am very thankful to Honorable Vice Chancellor, Registrar their secretariat and other supporting staff for their whole-hearted support in making this event grand success.

Dr. Sayeed Ahmad
Organizing Secretary IASTAM 2022
Coordinator: Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology)
Bioactive Natural Product Laboratory
School of Pharmaceutical Education & Research
Jamia Hamdard, New Delhi 110062, India
Mobile: +91-9891374647

XII IASTAM ORATION
AND
AWARD FUNCTION - 2022

Indian Association for the Study of Traditional Asian Medicine, India

IASTAM Conclave 2022

July 29-30, 2022 | New Delhi, India

INTERNATIONAL CONCLAVE
on
Multi-Targeted Therapeutics in Unani and Ayurvedic Medicine & Food Supplement

Organized by

Centre of Excellence in Unani Medicine

(Pharmacognosy and Pharmacology)

Bioactive Natural Product Laboratory School of Pharmaceutical Education and Research, Jamia Hamdard

New Delhi, India (NIRF RANK 1, PHARMACY INSTITUTE OF INDIA)

www.jamiahamdard.edu

In association with

Indian Association for the Study of Traditional Asian Medicine

IASTAM, Pune, India

www.iastamindia.org

INVITATION

Dear Friends

On behalf of the organizing committee, I would like to invite you to participate in the IASTAM Conclave 2022, to be organized by the Centre of Excellence in Unani Medicine (Pharmacognosy and Phytochemistry), Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India, from 29th-30th July, 2022.

The IASTAM Conclave will review, discuss, and explore the scope of current research topics related to traditional medicine specially Unani and Ayurveda, ethnopharmacology, medicinal plants, herbal drugs, food supplements and natural products. The conference will explore new approaches of research and development in preclinical (in silico, in vitro and in vivo) and clinical areas to address multi-targeted therapeutics in Unani and Ayurvedic medicine, it will also discuss safety assessment and quality control of herbal drugs and natural products, including their regulatory perspectives and post-market surveillance.

Jamia Hamdard, an outstanding institution of higher learning with distinct and focused academic programs, has been recognized as an Institution of Eminence by Govt of India. The School of Pharmaceutical Education and Research (SPER) at Jamia Hamdard, one of the oldest and most reputed Pharmacy Institutes of India, has been ranked #1 amongst the Pharmacy Schools of the country (NIRF 2017, 2019, 2020, & 2021, Ministry of HRD, Govt. of India). The Bioactive Natural Product Laboratory (BNPL) is a well-equipped laboratory of the Department of Pharmacognosy and Phytochemistry, and has been recognised recently as Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology) by Ministry of AYUSH, Govt of India. It has been involved in research on traditional medicines and herbal drugs, and has several research collaborations with industries and institutions in India and abroad.

New Delhi, the capital city of India, is pleasant in July, famous historically and worth to explore especially if this is your first time to visit. It is well connected by Air, Rail, Bus and Metro.

We are eagerly looking forward to welcome you in Delhi for a very meaningful intellectual meeting and a memorable stay. Please contact us, if we can help you any way, to make your visit more enjoyable.

Sincerely,

Dr Sayeed Ahmad
Coordinator &
Organising Secretary

XII IASTAM Oration and Award Function 2022 and Conclave on Multi-Targeted Therapeutics in Unani and Ayurvedic Medicine & Food Supplements (IASTAM 2022) is being organized by Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Bioactive Natural Product Laboratory, Jamia Hamdard, New Delhi, India in association with Indian Association for the Study of Traditional Asian Medicine, IASTAM, India on July 29-30, 2022, at New Delhi, India.

The conclave will focus on Traditional Medicine with special emphasis on multi-targeted therapeutics in Unani and Ayurveda for synergistic actions and on scientific validation of traditional claims for development of quality products from traditional medicine and medicinal plants. The regulatory issues highlighting importance of Traditional Medicine, medicinal plants and food supplements in development of scientifically validated products for targeted therapeutics will also be discussed. This will provide an ideal platform to the participants to present their research work, interact, debate and disseminate ideas amongst the distinguished professionals, eminent scientists, technologists, industrialists and the traditional health care professionals. On behalf of the organizing committee and IASTAM, it is our pleasure to invite you to participate in this conclave and take advantage of this opportunity.

JANAB HAMMAD AHMED
Chief Patron, IASTAM Conclave 2022
Chancellor, Jamia Hamdard

PROF M AFSHAR ALAM
Patron, IASTAM Conclave 2022
Vice Chancellor, Jamia Hamdard

PROF SM ARIF ZAIDI
Dean, SUMER
Organizing Chairman

PROF VIDHU AERI
Dean, SPER
Co-Chairman

PROF FJ AHMAD
Dean, SIST
Co-Chairman

DR SAYEED AHMAD
Organizing Secretary,
IASTAM Conclave 2022
Coordinator,
CoE Unani Medicine Head, Food Technology, Jamia Hamdard

DR CK KATIYAR
President, IASTAM-India,
CEO Emami Ltd,
Organizing Chairman

DR KIRTI BHATI
Secretary General, IASTAM-India,
Co Chairman

SHRI GIRISH PARIKH
Treasurer, IASTAM-India,
Co-Chairman

DR NARENDRA BHATT
Chairman, Scientific Services,
IASTAM Conclave 2022

IMPORTANT DATES

Abstract submission site opens	**:**	**25th May, 2022**
Abstract submission deadline	**:**	**15th July, 2022**
Registration deadline	**:**	**15th July, 2022**
Poster/Oral Presentations	**:**	**30th July, 2022**

Jamia Hamdard, established in 1989, "The Institute of Eminence" as recommended by Govt of India, is an institution of higher education located in New Delhi, India. It is a government-funded Deemed to be University primarily known for its Pharmacy, Medicine and Engineering programs. Jamia Hamdard is ranked among top 20 Universities of India by the National Institutional Ranking Framework (NIRF), Govt of India and has been accredited in 'A' grade by the National Assessment and Accreditation Council (NAAC) of India. The University offers graduate and postgraduate programs in Medicine, Pharmacy, Unani Medicine, Nursing, Science, Computer Applications, Management, Allied Health Sciences, Law and other disciplines. Jamia Hamdard is pioneer in initiating the integrated research in the modern and traditional streams of science and has been recently recognized as the Centre of Excellence in Unani Medicine (Pharmacognosy & Pharmacology), by Ministry of AYUSH, Govt. of India. [For further details, please visit www.jamiahamdard.edu]

School of Pharmaceutical Education and Research (SPER) is one of the oldest and the most reputed Pharmacy Institutes of India and has been ranked #1 amongst the Pharmacy Schools of the country (NIRF 2017, 2019, 2020 and 2021, Ministry of Education, Govt. of India). Currently, the school offers post-graduate and PhD programs in all major disciplines of pharmaceutical sciences in addition to diploma and undergraduate courses in Pharmacy. The SPER has instituted advanced infrastructural facilities including a well-equipped instrumentation centre having TEM, NMR, LC-MS/MS, GCMS, ICP-MS, HPLC, HPTLC, SFE etc, and other state-of-the-art laboratories such as Centre of Excellence in Unani Medicine (Pharmacognosy & Pharmacology), Bioactive Natural Products Laboratory and Nanomedicine Laboratory, among others. All the four departments of SPER are DST-FIST sponsored and are actively involved in research as evident from their publications in reputed journals.

Centre of Excellence in Unani Medicine, Bioactive Natural Products Laboratory (BNPL) is a well-equipped state-of-the-art laboratory under Department of Pharmacognosy and Phytochemistry (DST FIST and UGC SAP-II sponsored department) involved in research on metabolomics, quality control, monograph development, hyphenated chromatography, TLC bioautography, pharmacokinetics and stability studies of herbal drugs and formulations. Recently, it has been granted Rs 10.0 crore for development of Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology) from Ministry of AYUSH, Govt of India to carryout advanced research on Unani Medicine in collaboration with School of Unani Medicine Education and Research (SUMER), Jamia Hamdard. It has research collaborations with Industries (Hamdard, Dabur, Aimil, etc) and educational institutions in India and abroad (NCNPR, University of Mississippi, USA; University of Khartoum, Sudan; etc). [For further details, please visit www.bnpl.org.in]

Indian Association for the Study of Traditional Asian Medicine (IASTAM-India), Established in 1981, over 40 years is committed to study and promote AYUSH – Ayurveda, Yoga, Unani, Siddha & Homeopathy – the Indian Systems of Medicine for their rightful place in National & Global Health & Medical Care. IASTAM provides an interdisciplinary platform to bring together all Traditional Systems of Medicine for integrative dialogue with other disciplines and policy makers to develop and strengthen value for its effective use. IASTAM India also emphasizing research and development in the field of Indigenous systems of Medicine especially for Traditional Asian Medicine using interdisciplinary approaches to provide scientific basis to their claims.

MAJOR HIGHLIGHTS

Studies on Traditional Medicine and Dietary Supplements

- **Scientific validation of traditional claims and drug discovery**
- **Pharmacological evaluation of efficacy and safety on formulations and their constituents**
- **Identification and quality control of medicinal plants and other traditional resources**
- **Chromatographic analysis, HPTLC, metabolomics, network pharmacology, pharmacokinetics and stability studies of raw materials and formulations**
- **Interdisciplinary and integrative approaches for promotion and development of traditional medicines including detoxification and modification of dosage forms**
- **Multitargeted synergy based approaches in drug development and phytopharmaceuticals**
- **National and international regulatory challenges of current global market, IP rights and patents**
- **Clinical evaluation and pharmacovigilance studies of traditional medicines**
- **Studies on dietary supplements, nutraceuticals and functional foods**

REGISTRATION

CONFERENCE REGISTRATION FEE (NON-REFUNDABLE)

Category	National (INR) up to 15th July 2022	Foreign (USD) up to 15th July 2022
IASTAM Members	1,000	100
Non-members (Academia/Industry)	2,500	250
Students/ Research Scholars/ ISE/ SFE Members	1,500	150
Spot registration- for all (After 15th July, 2022)	3,000	300
Accompanying person	1,000	100

PRE-CONGRESS WORKSHOP (OPTIONAL): REGISTRATION FEE

Student Delegates: INR. 500/ Foreign Nationals: USD 50

Link for registration & abstract submission:
https://iastam.nopaperforms.com/

PRE-CONCLAVE WORKSHOPS WITH HANDS ON TRAINING

Pre conclave workshops will be organized on 27th to 29th July, 2022 or during the conference on below mentioned Topics in Jamia Hamdard, Only registered delegates of IASTAM 2022 will be eligible to register for the workshop through online registration portal. https://iastam.nopaperforms.com/

THEMES	
Workshop 1 :	Clinical Study Design, Protocol Writing and Regulatory Process for AYUSH Medicine
Workshop 2 :	Patent and IPR Issues of AYUSH Medicines
Workshop 3 :	Project and Manuscript Writing for AYUSH Professionals
Workshop 4 :	Therapeutic Applications of Cupping / Hijama Therapy

3 Days Pre-Conclave Competency Development workshop for AYUSH Professionals

27th to 29th July, 2022

Stream 1	**Project and Manuscript Writing for AYUSH Professionals**
Stream 2	**Clinical Study Design, Protocol Writing and Regulatory Process for AYUSH Medicine**
Stream 3	**Patent and IPR Issues of AYUSH Medicines**
Stream 4	**Therapeutic Applications of Cupping / Hijama Therapy**

DAY 1 (27th July, 2022)		
Registration		09:00-10:00 AM
Inauguration		10:00-11:00 AM
HIGH TEA 11:00 - 11:15 AM		
Workshop DAY 1 - STREAM 1 (11:15 AM - 05:00 PM)		
11:15 - 12:15 PM	Expert 1 & 2	Project writing for AYUSH Professionals
12:15 - 01:00 PM		Q&A Session / Hands on Training
Lunch Break 01:00 - 02:00 PM		
02:00 - 03:00 PM	Expert 3 & 4	Manuscript writing for AYUSH Professionals
03:00 - 03:45 PM		Q&A Session / Hands on Training
Tea Break 3:45 - 04:00 PM		
04:00 - 05:00 PM	Visit to Center of Excellence in Unani Medicine, Bioactive Natural Product Laboratory, Jamia Hamdard	
Workshop DAY 2 - STREAM 2 & 3 (10:00 AM - 05:00 PM)		
10:00 - 11:00 AM	Expert 5	Designing a Clinical Study
11:00 - 12:00 PM	Expert 6	Clinical Protocol Writing
12:00 - 01:00 PM	Q&A Session Hands on Training / Group Exercise	
Lunch Break 01:00 - 02:00 PM		
02:00 - 03:00 AM	Expert 7	Regulatory Process for AYUSH Medicine
03:00 - 04:00 PM	Expert 8	Patent and IPR issues of AYUSH Medicines
04:00 - 04:30 PM	Panel Discussion / Q&A Session	
High Tea 04:30 PM		
Workshop DAY 3 - STREAM 4 (10:00 AM- 03:00 PM)		
10:00 - 11:00 AM	Expert 9	Therapeutic applications of Cupping / Hijama therapy
11:00 - 12:00 PM	Expert 10	Clinical Demonstration / Hands on Training
12:00 - 01:00 PM	Q&A Session Hands on Training / Group Exercise	
Lunch Break 01:00 - 02:00 PM		
VALEDICTORY SESSION (02:15- 03:00 PM)		

12th IASTAM INTERNATIONAL CONCLAVE

SCHEDULE FOR CONCLAVE

DAY 1 (29th July, 2022)

Registration	1:30-03:30 PM
Inauguration	3:30-5:30 PM
High tea	5:30-6:00 PM
Orations (IASTAM)	6:00-7:30 PM
Inaugural Dinner	07:30 PM
Cultural Programme	08:00 PM

DAY 2 (30th July, 2022)

Keynotes	9:00-10:30 AM
High Tea	10:30-11:00 AM

Plenary Sessions 11:00-1:00 PM

Plenary session 1 (Science of Synergy)	**Plenary session 2** (Science of Mizaj/ Temperament)	**Plenary session 3** (Scientific validation of traditional claims)	**Oral presentations**	**HAH Award Presentation**	**Poster presentations**
Lecture 1	Lecture 1	Lecture 1	OP-1 to OP-12	HAH-1 to HAH-10	Poster Session 1
Lecture 2	Lecture 2	Lecture 2			
Lecture 3	Lecture 3	Lecture 3			
Panel discussion Session 1	Panel discussion Session 2	Panel discussion Session 3			

Lunch 1:00-2:00 PM

Plenary Sessions 02:00-4:00 PM

Plenary session 4 (Multi-targeted therapeutics)	**Plenary session 5** (Science of Shodhana/ Detoxification)	**Plenary session 5** (Functional Foods and Nutraceuticals / AYUSH Aahaar)	**Oral presentations**	**HAH Award Presentation**	**Poster presentations**
Lecture 1	Lecture 1	Lecture 1	OP-13 to OP-25	HAH-11 to HAH-20	Poster Session 2
Lecture 2	Lecture 2	Lecture 2			
Lecture 3	Lecture 3	Lecture 3			
Panel discussion Session 4	Panel discussion Session 5	Panel discussion Session 6			

Valedictory Session (Poster Awards, Oral Awards & Felicitations)
4:00-5:00 PM

High Tea 05:00 PM

SCIENTIFIC SESSIONS- SUBMISSION OF ABSTRACTS

Abstracts are invited from the scientific community for oral and poster presentations. All the accepted abstracts will be published in the Abstract Book and remain available online and in hardcopy.

There will be Three BEST PAPER AWARDS each in POSTER, ORAL & HAH presentations, which include a Memento, a Certificate, and a cash prize/reimbursement of registration fee of IASTAM Conclave 2022. The abstracts related to various aspects of traditional medicine, herbals drugs and medicinal plants can be submitted online as per the themes of IASTAM Conclave 2022.

Some of the selected as well as awarded manuscripts will also be considered for publication as special issue in a good, peer reviewed, Scopus-indexed journal with a good impact factor value such as Frontiers in Pharmacology, Journal of AOAC International, Pharmacognosy Magazine, Journal of Ayurveda and Integrative Medicine or Journal of Pharmacy & Bio Allied Sciences. The name of journals will be notified during the conference.

Instructions to authors

- The presenting author must be a registered delegate.
- Abstracts should only be submitted online at: https://iastam.nopaperforms.com
- Abstracts should be original work.
- All abstracts must be in English language and typed in Times New Roman, 12 font.
- Submit the abstracts as per the format, which includes Title of the abstract, Authors and co-authors and their affiliations (Underline the presenting author's name and indicate the author affiliation with superscript numbers)
- Abstracts should be structured including background, objective, methodology, results, and conclusion along with 3-5 keywords. (See the sample abstract)
- Word limit for the abstract is 250 words.
- The acceptance for oral/poster presentations must be sent through mail within a week of submission.
- Guidelines for oral/poster presentation will be available on the website.

SAMPLE ABSTRACT

Title: The title of the abstract must be short and self-explanatory (Font type: Times New Roman; Font size 14, bold)

Authors: First name Last name1*, First name Last name2, First name Last name1 (Font type: Times New Roman; Font size 12, bold)

1. Affiliation, Institution/ Organization, official address (Font type: Times New Roman; Font size 12, not bold)
2. Affiliation, Institution/ Organization, official address
   *Corresponding author: Phone: xxxxxxxxxx (mobile number preferred)
   E-mail: xxxx@xxx.xxx
   Underline the presenting author

ABSTRACT

(Not more than 250 words typed in Times New Roman, Font size 12)

Background: Clear definition and introduction to the topic. No reference should be included.

Aims/Objectives: Aim(s)/ objective(s) must be very clear.

Methods: Brief methodology of the study that must be clearly stated.

Results: Results must be presented in the running text. No figures and tables are allowed. Conclusion: Conclusions must be clear and answer the research question posed.

OPPORTUNITIES FOR COLLABORATION

This multidisciplinary program will address several crucial research issues for the promotion and development of the natural products, especially from medicinal plants. A series of keynote and plenary lectures by internationally renowned scientists in the field of medicinal plant research will focus on specific key areas. The conclave will offer an ideal platform for networking between the industries, academicians, scientists, planners and regulators, and those engaged in the medicinal plant research.

During the conference, an exhibition would be organized to give opportunity to private companies/scientific institutions to display their products/work. The exhibitors can also have one to one discussion with prospective business partners/collaborating agencies/ individuals.

HAKEEM ABDUL HAMEED YOUNG RESEARCHER AWARD

Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Bioactive Natural Product Laboratory, SPER, Jamia Hamdard has instituted this award for Young Researchers in the field of Traditional Medicine in the memory of ***Late Hakeem Abdul Hameed Sb,*** *Founder Chancellor, Jamia Hamdard for IASTAM Conclave 2022.*

Objective

To recognize and encourage the young talented Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Bioactive Natural Product Laboratory, SPER, Jamia Hamdard has instituted this award for Young Researchers in the field of Traditional Medicine in the memory of Late Hakeem Abdul Hameed Sb, Founder Chancellor, Jamia Hamdard for IASTAM Conclave 2022.

Criteria of selection

The selection will be limited to the delegates of the IASTAM Conclave 2022, who will register for the Congress and get their paper accepted for oral presentation. Participants engaged in research in any field of Traditional Medicine, up to the age of 40 years, are eligible.

Selection of awardee will be based on the quality of the abstract(s) submitted by the young researcher and accepted for oral presentation in the IASTAM Conclave 2022.

Three best presentations will be awarded based on the quality of oral presentation during the conclave, where the presentations will be judged by the experts from different areas, as decided by Scientific committee.

The award carries a Memento, a Citation and a Cash prize of registration fee.

Selection committee

Representatives from the Scientific Committee of IASTAM conclave 2022 along with the experts from different fields of Traditional medicine and medicinal plant research will be a part of the selection committee. Decision of the committee will be final. *The award will be conferred in the valedictory function of IASTAM Conclave 2022 at Jamia Hamdard, New Delhi.*

IASTAM INDIA - ORATIONS AND AWARDS 2021-22

IASTAM Pt. Shiv Sharma Oration for contribution to Promotion of Ayurveda

Mrs. Shailaja Chandra
Former Chief Secretary, Government of Delhi, New Delhi

IASTAM Zandu International Oration for Research contributions to Natural products

Dr. Liaquat Ali
Vice Chancellor, Bangladesh University of Health Sciences, Dhaka, Bangladesh

IASTAM Zandu International Oration for Research Contributions to Ayurvedic Products

Dr. Madhu Dikshit
Former Director, CSIR CDRI, Lucknow

Dr. K. N. Udupa IASTAM Award for Contributions to Research in Ayurveda / Indigenous Systems of Medicine

Prof. Subir Kumar Maulik
Emeritus Scientist, ICMR, New Delhi

Dr. C. Dwarakanath IASTAM Award for Contemporary Interpretation or Application of Ayurvedic Principles

Dr. Geetha Krishnan
TCI AYUSH, WHO, Geneva

Dr. K. M. Parikh IASTAM Award for Contribution to Drug Development of Ayurvedic/ Herbal Pharmaceutics

Prof. Atmaram Pawar,
Principal, B V, Poona College of Pharmacy, Pune

Shri Jugatram Vaidya IASTAM Award for Excellence in Shalya Tantra

Dr. Sunil Kumar Joshi
Vice Chancellor, Uttarakhand Ayurveda University, Dehradun

Shri Mathuradas Parikh IASTAM Award For Excellence in Profession-Ayurveda

Prof. Rakesh Sharma
President, Board of the Ethics and Registration, NCISM, New Delhi

Vinaben Patel IASTAM Award for Excellence in Teaching Ayurveda

Prof Abhimanyu Kumar
Vice Chancellor, Sarvepalli Dr Radhakrishnan Rajasthan Ayurveda Universaity, Jodhpur

Yoga Forum Munchen Patanjali IASTAM Award for Excellence in Interdisciplinary Development of Yoga

Dr Raghavendra Rao M
Director, CCRYN, New Delhi

Shri Gopaldas Parikh IASTAM Award for Contribution to Drug Development in the field of Phytochemistry, Medicinal Chemistry, Pharmaceutical Chemistry or Biochemistry

Dr Rabinarayan Acharya
DG, CCRAS, New Delhi

Vaidya Chandraprakash IASTAM Award for Contribution in Rasa Shastra

Dr. M. Gopi Krishna
Prof, SJGAMC, Bellary, Karnataka

IASTAM INDIA - ORATIONS AND AWARDS 2021-22

Newly Introduced Awards in Unani Medicine

'Hakeem Ajmal Khan' IASTAM Award for contribution to Promotion of Unani Medicine

Mr Hamid Ahmed
President, UDMA
CEO & Trustee
Hamdard Laboratories India (Food Division)
Former Chancellor, JH

'Hakeem Abdul Hameed IASTAM Award for contribution to Research in Unani Medicine

Prof Asim Ali Khan
Director General,
CCRUM, New Delhi

IASTAM INDIA MANAGING COMMITTEE MEMBERS

Dr. C. K. Katiyar
President

Dr. Kirti Bhati
Secretary General

Shre Girish G Parikh
Treasurer

Dr, Narendra Nath Mehrotra
Vice Presedint-North

Dr. Younis Munshi
Vice Presedint-East

Prof. Dr. S. N. Gupta
Vice Presedint-West

Dr. Nedungadi Haridas
Vice Presedint-South

Dr. Prasoon K Gupta
Regional Secretary-North

Dr. Ashok Kumar Jain
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HOW TO REACH DELHI AND JAMIA HAMDARD

By Flight 

New Delhi is well-connected to all major cities in India and abroad via regular flights. Airport(s): Indira Gandhi International Airport

By Train 

You can easily get regular trains to New Delhi from all major cities of the country. Delhi has more than 20 Railway Stations. The selected major stations within Delhi are: Anand Vihar Terminal (ANVT), New Delhi (NDLS), Old Delhi (DLI), Delhi Hazrat Nizamuddin (NZM), Delhi Sarai Rohilla (DEE) and Delhi Cantt. (DEC).

By Road 

Delhi is well-connected to all major cities by various Highways and bus services are frequent and comfortable. Major bus terminals include Kashmiri Gate Bus Terminal (ISBT), Anand Vihar Bus Terminal and Sarai Kale Khan Bus Terminal. Private taxis are also available at comfortable costs.

Jamia Hamdard (Convention Centre)

The JH is situated in the heart of the city at Mehrauli-Badarpur Road in Hamdard Nagar, Tughlakabad Institutional Area near Batra Hospital, in the vicinity of Khanpur, Sangam Vihar, Tughlaq Forte, Tara Appartment and Alaknanda market.

It can be reached easily by public transports

Local Bus: You can easily arrive at Jamia Hamdard by using bus no 548 from New Delhi railway station, 469 from Anand Vihar terminal, 425 & 429 from Old Delhi railway station. Other buses passing from JH are 525, 463, 717 and 34, etc. The nearest local bus stands are at Hamdard Library, Majeedia Hospital, Ravidas Mandir, Sangam Vihar and Batra Hospital.

Metro 

The nearby metro stations are Govindpuri (Violet line from Kashmiri gate), Greater Kailash (Magenta line), Saket (Yellow Line from New Delhi Railway Station).

Taxi 

One can reach the conference venue in less than Rs 1000/ from any corner of Delhi. Major Taxi available on Airport and Railway stations are: Pre-Paid Taxi (Delhi Govt), OLA and UBER (App-based cheap service providers).

VISA 

VISA is required for all international delegates. You are requested to visit the nearest Indian embassy or high commission or look at their website for further details. Invitation letter will be provided by the organizing secretary upon request.

Useful link: https://indianvisaonline.gov

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1. Crown Plaza, Okhla, New Delhi
2. Vivanta by Taj, Suraj Kund, Faridabad
3. Country Inn Suites by Radisson, Saket, New Delhi
4. Hilton Garden Inn, Saket, New Delhi
5. N.K. Residency, Kalkaji, New Delhi
6. La Residenza, Greater Kailash 2, New Delhi
7. Hotel Africa Avenue, Greater Kailash, New Delhi
8. Royal Imperio, Faridabad, Haryana
9. Alpina Hotel, Greater Kailash II, New Delhi
10. New Haven Hotel, Greater Kailash, New Delhi
11. Eros Hotel, Nehru Place, New Delhi
12. Hotel The Orion Plaza, Kalkaji, New Delhi
13. Priya Lodge, Near Batra Hospital, New Delhi

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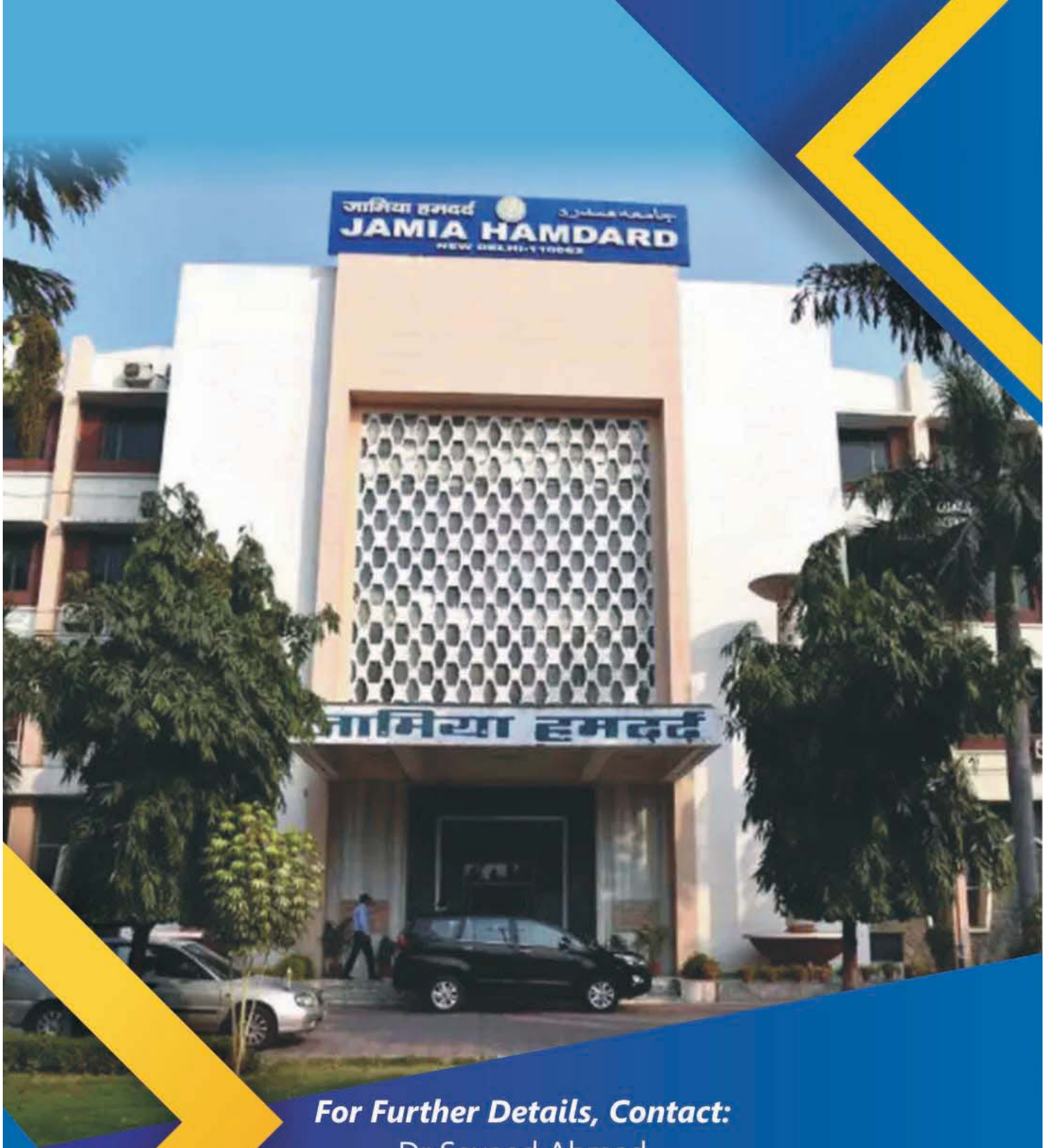

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Email: sahmad_jh@yahoo.co.in

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Delhi 110062

Zandu International Oration Award

For Research Contributions to Ayurvedic / Natural Product Development

Citation

DR. LIAQUAT ALI

Members of IASTAM-India are indeed privileged to confer the ***Zandu International Oration Award*** *for* ***Excellence in the field of Biology & Research on Ayurvedic products*** *to you,* ***Dr. Liaquat Ali.***

Sir, you are a biomedical scientist, educationist, and health system activist with more than 35 years of experience. With graduation in Medicine and M Phil in Medical Biochemistry from Dhaka University and Ph.D. in Medical Cell Biology from Uppsala University (Sweden) you served various public and private institutions including IPGMR, BIRDEM and the Bangladesh University of Health Sciences where you were the Founding Vice-Chancellor. Presently you are working as the Honorary Chief Scientist and Advisor of the Pothikrit Institute of Health Studies (PIHS) in Dhaka.

Dr Ali, in collaboration with a fairly large number of institutions in home and abroad you have supervised and co-supervised more than 300 MS, MPhil, MD and PhD students in various health and biomedical disciplines. With more than 250 papers/articles in peer-reviewed journals/books and nearly150 invited lectures in 38 countries of the world you are one of the most cited biomedical scientists in the region. Through extensive collaboration with regional Ayurvedic and other traditional medicine professionals as well as relevant researchers you have screened a large number of antidiabetic plant materials. Your works on the glycemic index of local foods have also contributed in the appropriate use of carbohydrate-based diets in the management and prevention of cardio metabolic diseases.

Dr Ali, you are a Member/Convener/Advisor of several Regional/National Committees such as Expert Group formed by WHO-SEARO to design Regional Primary Health Care Strategy; Public Health Advisory Group formed by the Ministry of Health & Family Welfare in Bangladesh to combat COVID-19; National Committee formed to increase the Laboratory Diagnostic Capacity and Coordination to combat the Coronavirus Pandemic; Technical Working Committee for the Recommendation of the Registration Process of Diagnostic Reagents; Clinical Trial Advisory Committee of the Directorate of Drug Administration; National Technical Committee on Medical Biotechnology, Core Committee for designing Health Workforce Strategy, Consultative Group to evaluate/revise Health, Nutrition & Population Sector Program 2016-2023; and Consultative Group to design the Master Plan and Development Project Proposal of three new public sector Medical Universities in Bangladesh at Rajshahi, Chittagong and Sylhet

Dr. Ali, you have been awarded with Fellowships/ Memberships/Honors from various professional organizations including International Program in the Chemical Sciences (Sweden), Bangladesh Academy of Sciences, Indian Public Health Association, and Islamic World Academy of Sciences.

Congratulations on this stupendous effort and may the Almighty bless you with the best of health to provide continued guidance in the field of Ayurvedic Medicinal Plants and Natural Product Research for many more years to come.

Dr. C.K. Katiyar
President
IASTAM India

Dr. Kirti Bhati
Secretary General
IASTAM India

Prof M Afshar Alam
Vice Chancellor
Jamia Hamdard, New Delhi

‘Hakeem Abdul Hameed‘ IASTAM Award

For Contribution to Research in Unani Medicine

Citation

Dr Asim Ali Khan

*IASTAM-India in memory of **‘Hakeem Abdul Hameed** is extremely happy to present to you, **Dr. Asim Ali Khan** this ‘Award for **contribution to Research in Unani Medicine’**. Sir, you are Director General of Central Council for Research in Unani Medicine, Ministry of AYUSH, Government of India and Professor of Unani Medicine at Jamia Hamdard, New Delhi.*

You are a Member of Board of Governors, Central Council of Indian Medicine, Govt. of India, involved and responsible for Policy making, Planning, implementation and Governance of Quality Education, Training and Researches in Ayurveda, Unani; Siddha Sciences in AYUSH systems through all AYUSH Universities, All India Institutes, National Institutes, Research Institutes, Government and Private colleges etc.

Dr Khan, you are a member on various important committees of Govt. of India, such as NITI AYOG, Interdisciplinary AYUSH, R & D Task Force, CSIR, Ministry of Science &; Technology, WHO Committee/s for developing the Standard Terminologies of Unani Medicine and Committee for developing Benchmark for education ; Practice of Unani Medicine, Scientific Committee of Pharmacopoeia Commission of Indian Medicine ; Homoeopathy (PCIM & H) and many more.

Sir you have signed many MoUs with many leading scientific and research organisations at national & International levels. You are also directing and coordinating all the research and developmental activities related to Unani Medicine including expansion plan and outreach activities across the country as well as at global level for its promotion and acceptance. In the last few years you have played an active role with World Health Organization (WHO) team in developing the ‘Benchmarks for Education’ and ‘Benchmark for Practice’ in Unani medicine which have recently been released by WHO.

Sir, with your committed and constant efforts and counselling, you have been able to spread the knowledge of Unani System of Medicine to many countries like Nigeria, Congo, Malaysia, Syria, Iran, China and Bahrain.Sir, you are the Editor in Chief of many National and International Journals and News Letters You have been Chairman or member of many important committees including the member of Research Project Approval Committee, Member of Board of Governors &; Internal Quality Assurance Cell (IQAC) of Jamia Hamdard (University), New Delhi.

For community Service, you have remained actively involved in the UNICEF project of Polio eradication in the Districts of Western Uttar Pradesh and has been leading various teams of volunteers in these areas.

You have received more than 25 appreciations/awards from various organizations as an appreciation for the services he rendered on various occasions. Author of above hundred publications in journals of repute in your field and supervised many Ph D and PG scholars. Your articles on health-related matters frequently appear in various health magazines as well as National Newspapers. Your interviews and talks on health-related concerns have been telecasted from various ‘National News TV Channels’ like ETV and ZeeTV etc.

Congratulations on this stupendous effort and may the Almighty grant you, health and many more years of active life to contribute to research in Unani Medicine

Dr. C.K. Katiyar
President
IASTAM India

Dr. Kirti Bhati
Secretary General
IASTAM India

Prof M Afshar Alam
Vice Chancellor
Jamia Hamdard, New Delhi

‘Hakeem Ajmal Khan ‘ IASTAM Award

For Contribution to promotion of Unani Medicine

Citation

Mr. Hamid Ahmed

*IASTAM-India, ‘in memory of **Hakeem Ajmal Khan**’, is extremely happy to present to you, **Mr. Hamid Ahmed** this ‘Award for **contribution to promotion of Unani Medicine**’.*

Sir, you are the Chief Executive Officer and Trustee of Hamdard Laboratories India- Food Division; Former Chancellor of Jamia Hamdard, a Deemed to be University; Founder and President of Unani Drug Manufacturers Association (UDMA); an eminent business personality based in New Delhi.

Sir, you are a distinguished philanthropist who has worked diligently on education, charitable activities, and upliftment of the poor sections of society, as a member of Hamdard National Foundation (India) – HECA.

Sir, as a member of Business and Employment Bureau, you are working extensively in the area of skill development and employment opportunities for the backward classes and economically weaker sections.

Sir, as Founder and President of UDMA your contribution is enormous in promotion of Unani Medicine in various ways including lecture series, UDMA day celebrations and organising conferences, organization of CME programs, health mela, free camps and providing scholarships to Unani professionals, are only few.

In 2022, you are felicitated with the prestigious Paul Harris Fellow, for your services to the community, including a tree plantation drive, facilitating 42,000 vaccinations in two centres in Delhi and for Holistic Health Camps for COVID care for the society.

Congratulations on this stupendous effort and may the Almighty grant you health, and a long life to continue your efforts to benefit the entire Unani fraternity.

Dr. C.K. Katiyar
President
IASTAM India

Dr. Kirti Bhati
Secretary General
IASTAM India

Pandit Shiv Sharma Oration

For Contribution to the Promotion of Ayurveda

Citation

Smt. Shailaja Chandra

IASTAM-India, in memory of its Founder President ***Padmabhushan Pandit Shiv Sharma*** *is privileged to present this Oration Award to you,* ***Smt. Shailaja Chandra*** *for 'Excellence in Propagation of Ayurveda' and the services rendered to develop the AYUSH Sector.*

Your experiences have spanned more than five decades cutting across several sectors and regions in India. For 38 years as an IAS officer, you served under States' governments and the Central Government in different positions including Secretary, Department of Indian Systems of Medicine, and the first and only woman to be appointed as Chief Secretary, Delhi.

During prolonged career you have explicitly contributed to the health care sector on designing, negotiating, and implementing important projects on the Cataract Blindness, Malaria, by-pass surgery to CGHS beneficiaries and taken several initiatives. Biodiversity and Wetland Projects have been areas of your interest.

As Secretary, Dept. of ISM (Now AYUSH) we fondly recollect you as an able administrator and for specific contributions in the areas of Industry, Quality Improvisation, establishment of National Medicinal Plant Board, Traditional Medical Knowledge Library, development of National Yoga Institute, All-India Institute of Ayurveda, and National Institute of Siddha medicine and efforts for Global Exposure of Indian Systems of Medicine.

As the Chairperson your determined efforts helped transform several major libraries in Delhi and your contributions have been recognised by the Ministry of Culture.

As a 'Reformer with Conviction', you initiated and lead several activities including bringing in changes in relevant acts for school education and also initiative for reforms in Ayurveda education. Your two Reports on the Status of Indian medicine & Folk Healing published in 2011 and 2013 are important reference points for policy makers.

Your passion for public services is more evident as even after retirement you have headed important activities related to Delhi Public Grievances Commission, Jansankhya Sthirata Kosh and as Director in both Public and Private Organizations. Over 20 years as a policy analyst you have continued to share observations on the issues of public interest, mainly on health, in the form of nearly 150 articles, debates, lectures and even scientific papers in esteemed journals as a co-author. Obviously, you are regarded as an authority on public administration in the areas of health, medical pluralism, population, Governance and Gender equality.

Smt. Chandra was awarded the Honorary Degree of Doctor of Literature by the University of Trans Disciplinary Health Sciences and Technology.

Shailajaji, you have been a role model overcoming obstacles and promoting the development of whichever institution or sector or an activity that you get associated with to make a discernible difference to it for the better of the society.

Congratulations on this stupendous effort and may the Almighty grant you many more years of active life to continue to serve the cause and promotion of AYUSH systems for better heath.

Dr. C.K. Katiyar
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Secretary General
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Prof M Afshar Alam
Vice Chancellor
Jamia Hamdard, New Delhi

Shri Gopaldas Parikh Award

For Contributions to Drug Development

Citation

Prof. Rabinarayan Acharya

IASTAM-India in memory of ***Shri Gopaldas Parikh****, a leader in the Ayurvedic industry, is privileged to present to you,* ***Prof. Rabinarayan Acharya*** *this Award, for your* ***Contribution to Drug Development in the field of Phytochemistry, Medicinal Chemistry, Pharmaceutical Chemistry or Biochemistry.***

Prof Acharya, you are Director-General of Central Council for Research in Ayurvedic Sciences (CCRAS), New Delhi, former Dean IPGT&RA, Professor and Head Dravyaguna, at Institute for Post Graduate Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar, Gujarat with 27 years of teaching and research experience in the various fields of drug research.

You perused B.Sc. (Botany, Hons.), BAMS (Hons.) degree from Utkal University, PG Diploma in Bio Ethics from IGNOU & M.D. (Ayu.) and Ph.D. in Dravyaguna from Gujarat Ayurved University, Jamnagar.

Dr. Acharya, you have served IGNOU as a course writer, WHO as a temporary advisor, NAAC, and NCISM as an expert committee member in various committees. You have also served the Ministry of AYUSH, Govt of India, in different capacities such as Chairman, APC, member ASUDTAB, member SAG of CCRAS, and Member PSC of NMPB, National Coordinator, National Pharma covigilance program for ASU drugs.

Dr. Acharya, you have been instrumental in establishing pharmacopeial standards and ethnopharmacological claims of more than 30 Anukta Dravya (extra-pharmacopeial drugs) and studied the effect of shodhana on visa and upavisa dravya (scheduled E1 drugs) and contributed to establishing pharmacovigilance programme for Ayurveda drugs in the country by organizing many awareness, training, and scientific programmes.

You represented India in five different countries, in various capacities, including the WHO meeting on herb-drug interaction in Beijing and Pharmacovigilance in Geneva. You are a life member of six professional societies and has served as organizing secretary/ coordinator of many national and international seminar/workshop/ CME programmes.

Sir, you have been awarded best teacher award for drug Research Teaching and the best research paper award on literary research in Ayurveda by CCRAS, Govt. of India. You have to your credit 13 monographs, 5 books 12 book chapters and 325 Publications, and 10 Research projects and have guided 35 Ph.D. and 51 Post Graduate Scholars. Dr. Acharya is also associated with many scientific journals either as an editor or member of the editorial team.

Congratulations on this stupendous effort and may the Almighty grace you with the best of health to continue to provide guidance to upcoming researchers.

Dr. C.K. Katiyar
President
IASTAM India

Dr. Kirti Bhati
Secretary General
IASTAM India

Prof M Afshar Alam
Vice Chancellor
Jamia Hamdard, New Delhi

Vinaben Patel IASTAM Award

for Excellence in Teaching in Ayurveda

Citation

Prof. Abhimanyu Kumar

*IASTAM-India in memory of **Smt Vinaben Patel**, a modernist with faith in tradition, is proud to present the; "Award of Excellence" to you, **Prof. Abhimanyu Kumar**, for your **contribution to the teaching of Ayurveda.***

Sir, you are Vice Chancellor, Dr Sarvepalli Radhakrishnan Rajasthan Ayurved University, former Vice Chancellor Uttarakhand Ayurved University, Dehradun, involved in academic, clinical and research activities for last 32 years in various capacities with MD in Ayurvedic Pediatrics, PhD, master's degree (MSc) in applied Psychology and Diploma in Yoga.

Sir you are a founder Director of All India Institute of Ayurveda, New Delhi, made the institute fully functional with NABH accredited and MoU with leading organizations like ICMR, AIIMS New Delhi, CCRAS, Jawaharlal Nehru University, Delhi University, IIT Delhi, European Academy of Ayurveda, Germany etc. Former Director General of Central Council for Research in Ayurvedic Sciences, New Delhi, Ministry of AYUSH, Govt. of India. You are member, Advisory Council, NCISM & Jodhpur City Knowledge Cluster, IIT Jodhpur.

Sir you have executed two international collaborative research projects and two others sponsored by Government of India; two industry-institutes based collaborative clinical research projects. Sir you have been Member and Ayurveda expert in various national and international universities, institutes and organizations, Nominated Member, Steering Committee constituted by the Planning Commission for 11 th five Year Plan & 12th FYP, Dept of AYUSH, Ministry of Health & Family Welfare, Govt. Of India. Nominated by Dept of AYUSH, Govt. of India, as National Coordinator for Clinical Documentation in National Institutes under Dept of AYUSH. Ayurveda expert .

You have been instrumental as Academic expert for Curriculum designing of PG dip course in Ayurveda, University of Debrecen, Hungary. Chaired subject Committee for revising the syllabus of BAMS & MD (Ay) for Central Council for Indian Medicine. Former Head Department of Bal Roga, National Institute of Ayurveda, Former Visiting Professor, Dept of Neurology, Scott ; White Hospital, School of Medicine, A & M University Texas USA. Invited Speaker, Embassy of India, Berlin (Germany), Hungary, China, Brazil, Switzerland, Latvia etc.

You have been honoured to accompany as Technical Expert with Honorable Minister of AYUSH and Secretary, Ministry of AYUSH Govt of India (a three membered team) to World Health Organization (WHO) Head quarter Geneva (Switzerland) to sign Country (India) MoU with WHO. Authored twelve books, contributed as Chapter author in three books and published 147 research papers in various scientific national and international journals. Guided 65 MDs and 10 PhD scholars. Involved in teaching and training international scholars. Worked as Member Secretary of Ayurvedic Pharmacopoeia Committee, Govt. of India.

You have been honoured 'Lifetime Achievement Award' for contribution in the field of Ayurveda. awarded by Secretary AYUSH. You were conferred with 'Ayurved Shree-2015' Samman, 'Best Teacher & Education Administrator Award', 'Dhanwantari award' for Professional Excellence, 'Kamal Patra Award' for professional Excellence and several other.

Congratulations on this stupendous effort and may the Almighty give you, health and energy to continue with the teaching and knowledge of the Samhitas - our ancient scriptures.

Dr. C.K. Katiyar
President
IASTAM India

Dr. Kirti Bhati
Secretary General
IASTAM India

Prof M Afshar Alam
Vice Chancellor
Jamia Hamdard, New Delhi

Shri. Jugatram Vaidya Award

For Excellence in Shalya Tantra

Citation

Prof. Sunil Kumar Joshi

*IASTAM-India in memory of **Shri. Jugatram Vaidya**, a renowned Shalya Chikitsak, has the pleasure of presenting to you, **Prof. Sunil Kumar Joshi** this 'Award for **Excellence' in Shalya Tantra.***

Sir, you are Vice Chancellor Uttarakhand Ayurved University, Dehradun, Former Vice-Chancellor, Doon University, Dehradun, Former Principal, Rishikul Government Post Graduate Ayurvedic College, Hardwar, involved in academic, clinical, and research activities for last 30 years, strongly believer in medical ethics and Vedic sciences.

Dr. Joshi, you have developed a keen interest in understanding the Marma science and Marma therapy, re-discovering the potential of Marma science. With a vast demographical exposure of patients, You have treated thousands of patients with general and chronic ailments, and have performed more than five thousand surgical operations.

Your special contribution to the development and re-establishment on Marma Science and Marma Therapy helped to introduce the Marma Science and Therapy Syllabus in different Universities and Institutions such as BA , M.A, M.Sc., Yoga and Alankar/Acharya-Astrology, Course You have been coordinator of National Institute of Open Schools for the vocational course of Ayurveda, ,Member Course development committee of National Institute of Open Schoolsfor the vocational course of Ancient sciences of Indian origin, Expert in Commission for Scientific and Technical Terminology, Ministry of Human Resource Development, Department of Higher Education, Govt. of India., Member of Advisory Committee on the Vocational Courses/Program in the Health and Paramedical Sector, National Institute of Open Schooling M.H.R.D. Govt., of India and many more.

You have been Chairperson for Institutional Ethics committee Patanjali Yogapeeth Trust Hardwar, Co-ordinator for Kshar Sutra training programme & Panchakarma and Kshar Sutra reorientation programme organized by Health and family welfare ministry Government of India You have been a speaker and chairperson for seminars, conferences and workshop exhibitions in various parts of the countries such as Japan, Belgium, France, Germany, Switzerland organized by UNICEF, Ministry of Health & Family Welfare Govt. of India and Department of Industries (U.P) and several other organizations around the globe.

Sir, you are a life member of various associations such as Indian Red Cross Society, The Indian Science Congress, Wider Association of Vedic Studies, New Delhi, and Rotary club. You are Member of Research committee, Association of Indian Universities and General Body Uttarakhand Sanskrit Academy, Haridwar. You have authored 11 Books, 4 Book Chapters in Marma Science and Marma Therapy. You have 47 international and national publications, 2 patents at your credit, it and have guided 5 MD Scholars. Your talks on Marma Therapy and Ayurved have also been aired on radio and television channels like "Aaj Tak" & "Zee Hindustan".

Sir, you have been awarded Ayurveda Bhushan, Ayush Ratna, Uttarakhand Ratna for surgery, Gold medal ICIM-96, Star Medal, and many more. You are a fellow of the foundation of Integrated Medicine (F.F.I.M).

Congratulations on this stupendous effort and may the Almighty give you the best of health and many more years of service in the cause of humankind.

Dr. C.K. Katiyar
President
IASTAM India

Dr. Kirti Bhati
Secretary General
IASTAM India

Prof M Afshar Alam
Vice Chancellor
Jamia Hamdard, New Delhi

Yoga Forum Munchen Patanjali Award

For Excellence in Interdisciplinary Development of Yoga

Citation

Dr. Raghavendra Rao M

IASTAM-India is immensely privileged to present to you, ***Dr. Raghavendra Rao M*** *the* ***'Yoga Forum Munchen Patanjali Award'*** *for your* ***'Outstanding Contribution to Interdisciplinary Work in the field of Yoga.'***

Dr. Rao, you are the Director of CCRYN, Ministry of Ayush Govt of India. You are a mentor to several start-ups in HCG and outside HCG in the field of yoga and wellness applications. You have Developed and setup Integrative medicine research and Departments in HCG group of Hospitals. You started the Center for Mind Body Interventions through Yoga (CMBIY) in AIIMS and PGIs at CCRYN.

Dr Raghavendra, you have a bachelor's degree in Naturopathy and Yogic Sciences, PhD from SVYASA, the NIH (National Institutes of Health) PICRC Osher fellowship at Osher Center for Integrative Medicine, UCSF school of Medicine San Francisco Dr Raghavendra you are a founder member of the Association for Translational Research in Oncology. You have been influential for getting accreditation from European Society for Medical Oncology for the First Integrative Oncology department at HCG Bengaluru Institute of Oncology in 2014.You have contributed in a significant manner in conducting UICC workshops on Yoga and Integrative Oncology a Kuala Lumpur, Malaysia and Melbourne, Australia.

You have been instrumental in generating preliminary evidence that led to international collaborations and grants from National Cancer Institute, USA. You have been a part of two R21 grants from NIH NCCAM and one R01 grant from NCI, USA. Apart from this you have also received funding for several research projects from DST, and Ministry of Ayush, Govt of India.

As the Director of CCRYN, you have been a key person in initiating tele yoga guidelines as well as yoga and naturopathy guidelines for management of covid, Initiated tele yoga consultations during covid and conducted first online "My Life My Yoga" competition through social media campaigns in over 128 countries which received lots of accolades.

You have over 93 International publications and 2 International book chapters and co-authored one Book. You research work has created a significant impact with H index of 21. You have guided four PhD and several MSc students in their research. Your research work has been cited in several Guideline recommendations and Clinical practice guidelines. You have also been a mentor to DNB and fellowship students in Surgical oncology, Pathology, Radiation oncology and psycho oncology at HCG Hospitals.

Congratulations on this stupendous effort and may the Almighty grant you, health and many more years of active life for the continued Development of Yoga and philosophy.

Dr. C.K. Katiyar
President
IASTAM India

Dr. Kirti Bhati
Secretary General
IASTAM India

Prof M Afshar Alam
Vice Chancellor
Jamia Hamdard, New Delhi

Dr. K. M. Parikh Memorial Award

For Contribution to the Development of Ayurvedic/Herbal Pharmaceutics

Citation

Dr. Atmaram Pandurang Pawar

IASTAM-India in memory of ***Dr. Krishnakant M. Parikh****, its founder, treasurer and a visionary in the field of Ayurvedic Pharmaceutical research; development, is proud to present you,* ***Dr. Atmaram Pawar*** *this* ***"Dr. K. M. Parikh Memorial Award"*** *for your* ***contribution to the development of Ayurvedic/Herbal products.***

As a renowned educationist and administrator, Prof. Pawar, you appeared as a tireless academician and herbal scientist. Presently, you are the Principal of Poona College of Pharmacy, Bharati Vidyapeeth (Deemed to be University), Pune.

As a distinguished academician and researcher, you have actively pursued research in the area of novel drug delivery systems, phytomedicines and targeted anticancer drug delivery systems, where you have credit of filing 04 patents, 124 international and 39 national peers reviewed research papers with Google Scholar h- index 35, Scopus listed 112 publications, and i-10 index 84. You have also mentored 10 PhD students and currently 7 more are registered.

You have keen interest in incorporating new concepts in teaching and modernization of the curriculum where first of its type of books - Modern Dispensing Pharmacy authored by you is exemplary contribution, for which, you have been awarded with IJPER Prof. BM Mithal national Award 2007. You have authored 12 such innovative books in pharmacy curriculum. Moreover, to reach out pharma science to the society, you have published 03 books in Indian languages, published more than 75 articles in leading newspapers, for which, you have received special award form Maharashtra Sahiytya Parishad, Pune. Your active presence as expert in public meetings, panel discussions and expert opinion on TV media and delivery of more than 300 invited lectures reflects your passion to promote healthcare.

We honour your organizational contribution in the form of services like Chairman/member of scientific services of various APTICON, IPC, SFEC, IASTAM and IAPC conferences and academic services as a member, Pharm. D. committee and member B. Pharmacy syllabus committee of Pharmacy Council of India and several Indian universities.

Prof. Pawar, you have been conferred 11 prestigious awards including an International level Healthcare Leadership award 2020 and various national awards viz. Best Teacher Award of 54 th IPC Trust 2005, Prof. B.M. Mithal national Award 2007, APTI's Teacher for the Year Award 2015, IPA Fellowship Award 2018, Maharashtra Sahiytya Parishad Pune Award 2021 and in house awards - Outstanding Teacher 2011,Best Researcher Award 2015 of Bharati Vidyapeeth (Deemed to be University) Pune.

Congratulations on this stupendous effort and may the Almighty grant you, health and many more years of active life to contribute to the development of Ayurvedic products and pharmaceutical sciences.

Dr. C.K. Katiyar
President
IASTAM India

Dr. Kirti Bhati
Secretary General
IASTAM India

Prof M Afshar Alam
Vice Chancellor
Jamia Hamdard, New Delhi

Zandu International Oration Award

For Research Contributions to Ayurvedic / Natural Product Development

Citation

Dr. Madhu Dikshit

Members of IASTAM-India are very privileged to confer upon you, ***Dr. Madhu Dikshit*** *as an International Expert, the* ***Zandu International Oration Award*** *for, Research* ***Contributions towards Botanicals and Natural Products.***

Dr. Madhu, you are presently, JC Bose National Fellow at CDRI, National Chair, THSTI (Translational Health Science and Technology Institute) Haryana. former Director, CSIR-Central Drug Research Institute, Lucknow (UP), Professor in charge, Bioscience & Bioengineering, IIT Jodhpur (Rajasthan).

Madam, you are an Indian cardiovascular biologist, and pharmacologist, known for your studies on cardiovascular pathologies such as thrombosis, and Redox Biology with a specialization in Molecular Pharmacology.

Dr. Dikshit, all the three major Indian science academies explicitly the Indian Academy of Sciences, the National Academy of Sciences, India, and the Indian National Science Academy have chosen you as their fellow. You are also a Fellow of the National Academy of Medical Sciences, India; International Academy of Cardiovascular Sciences, and JC Bose National Fellow, Department of Science and Technology, India.

You are a recipient of the Young Scientists Medal and have received prestigious awards like Vigyan Ratna of Council of Science & Technology U P, National Bioscience Award, by the Department of Biotechnology, Ministry of Science & Technology, NASI-ICMR Distinguished Professor Chair, and many more of such kind. You have been honored with the Senior Scientist Position award by the French Ministere de la Recherché, at a CNRS, Lab Faculty of Medicine Nancy, France.

You have been President, The Cytometry Society of India, Vice President, of the Society of Biological Chemists, and a member of many research societies such as the Indian Society of Free Radical Research, and the International Society of Heart Research (Indian Section), Indian Pharmacological Society. You are an Editorial Board Member of renowned journals like Indian Journal of Pharmacology, Annals of Neurosciences, Drugs, and Pharmaceuticals Industry Highlights, Cytometry Part A, Wiley-Blackwell, Redox Biology, Elsevier.

Your affinity for herbal and Natural products is reflected through research work in Cardiovascular, Neutrophil, Redox Biology, you have guided 37 Ph.D.,10 MD, and MS Scholars and have 8 patents, 204 published papers, 3 books, 12 chapters to your credit completed 20 major projects.

Congratulations on this stupendous effort and may the Almighty bless you with health and energy to continue your contributions in the field of Natural products and drug development and to uplift traditional knowledge and systems of medicine for many more years to come.

Dr. C.K. Katiyar
President
IASTAM India

Dr. Kirti Bhati
Secretary General
IASTAM India

Prof M Afshar Alam
Vice Chancellor
Jamia Hamdard, New Delhi

Dr. C. Dwarkanath Memorial Award

For Contribution to Contemporary Interpretation and Application of Ayurvedic Principles

Citation

Dr. Geethakrishnan Pillai

IASTAM-India in memory of the great Ayurvedic research scholar ***Dr. C. Dwarakanath,*** *presents this 'Award for Excellence' to you,* ***Dr. Geethakrishnan Gopalakrishna Pillai*** *for your* ***Contribution to Contemporary Interpretation and Application of Ayurvedic Principles.***

Sir, you are Technical Officer, (AYUSH expert), Traditional, Complementary, and Integrative medicine Unit, Integrated Health Services Department, UHL cluster, at World Health Organization, Head Quarters, Geneva. Former HOD (Head of the Department) Coordinator- Integrative Medicine and Senior Consultant – Ayurveda. Medanta- The Medicity Hospital, Gurugram, Haryana, India.

You have been instrumental in the development of WHO's global public health goods such as the benchmarks for training and practice of Ayurveda and Unani, and international standard terminologies of Ayurveda, Unani, and Siddha systems of medicine. You are also responsible for the development of the Ayurveda, Unani, and Siddha module for WHO International Classification of Diseases and development of global tools for propagation and appropriate use of Yoga in health promotion by means of the WHO mYoga mobile application.

You have played a vital role to conceptualize, strategize, and execute the setting up the WHO Global Centre for Traditional Medicine (GCTM) in India. The GCTM which is established as a part of WHO headquarters, Geneva and launched jointly by Prime Minister of India and the Director General of WHO, is financially supported by the Ministry of Ayush, Govt of India.

You have been a member of the National Task Force, developed Clinical trial protocol for COVID, built collaborations for research in COVID, and started public health research programs in COVID. You have found and secured resources, engaged MHRA, developed products and set up an international clinical trial in COVID to be conducted in United Kingdom, bringing together the London School of Hygiene and Tropical Medicine (LSHTM), and the Ministry of AYUSH Govt of India.

You are a key in setting up constructive collaborations and Strategies for proper use of Traditional Medicine (TM) in the Cancer care continuum, in collaboration with the National Cancer Institute, National Institutes of Health, United States of America to develop strategies for LMICs (Low-Middle Income Countries) to improve their use of TM resources in Cancer care.

Dr. Krishnan, you have been recognized with AYUSH Kamal Ratna, Swadeshi National Award for AYUSH integrated Medicare. You have to your credit 3 international and 6 national Patents, 2 funded Research projects, 26 publications in reputed journals and 13 publications in international and national conference proceedings, 21 clinical studies, 27 Pre-clinical studies in the areas of Herbal drug research- mostly on Diabetes mellitus-, Integrative Medicine, Clinical application of Integrative medicine; and Health Policy and advocacy.

Congratulations on this stupendous effort and may the Almighty grant you health and many more years of active life to contribute to learning, teaching, and research in Ayurveda.

Dr. C.K. Katiyar
President
IASTAM India

Dr. Kirti Bhati
Secretary General
IASTAM India

Prof M Afshar Alam
Vice Chancellor
Jamia Hamdard, New Delhi

Vaidya Chandraprakash Memorial Award

For Contribution in Rasa Shastra

Citation

Dr. M. Gopi Krishna

*IASTAM-India, in memory of '**Vaidya Chandraprakash**, a renowned Ayurvedic Physician of India who practiced Rasa-Shastra is privileged to present to you, **Dr. M. Gopi Krishna,** this 'Award of Excellence' for your **contribution to the field of Rasa Shastra.***

Dr.M.Gopi Krishna, you are professor and HOD (Head of the Department) of Rasa Shastra and Bhaishajya Kalpana at Sri Jagadguru Gavisiddheswara Ayurvedic Medical College and Post-Graduate Research Centre, Koppal, Karnataka.

Dr.M.Gopi, you have obtained MD Rasa Shastra, from S.D.M. College of Ayurveda (Rajiv Gandhi University), Udupi. You are a student of a national level personality Prof. Siddi Nandan Mishra, the leading expert on Rasa Shastra in India. Sir you are Member of APC-AYUSH and Mercury conservation in India – AYUSH

You have been Co-Founder and Chairman – Indian Institute of Ayurveda and Rasashastra an e-learning platform, hosting many courses on Pharmaceutical and Clinical topics. You have been invited as resource person in various international and national conference.

Sir you have an experience in preparing all types of Ayurvedic preparations like Pottali kalpas, Kupipakwa, Parpati, khalviya and in modern pharmaceutics and metallurgy with multidimensional views about theory and practical approaches with credentials of good successful clinical practice in managing cases like cancer, metabolic disorders, lifestyle disorders and auto immune diseases.

Sir, you have travelled extensively for exploring Ayurveda from tribes in the forests of Andhra Pradesh in Sreeshailam forests, Mahanandi forests, Nalgonda forests, Devagiri forests with vast collection of various samples, photograph and details of various Ayurvedic medicines, conversions of mercury in the form of Bhasma, metallic conversion, extraction of Satva of copper at 1000 C temperature method etc. Encouraging discussions and interactions with various tribes, sadhus etc. Finding of rare species of plants, siddha preparations etc.

In personal museum, you have obtained and preserved a substantial number of samples of nearly 250+ rare and unique Geological samples associated to Rasa Shastra. You have conducted field survey for Mineralogical and herbal across India and around the globe at Himalayas from Punjab, Rajasthan, Jammu Kashmir parts of Himalayan, Himachal Pradesh, Uttarakhand, and Nepal, Tibet, China parts of Himalayas and in Europe.

Congratulations on this stupendous effort and may the Almighty give you many years of active life to continue contributing to the field of Ayurveda.

Dr. C.K. Katiyar
President
IASTAM India

Dr. Kirti Bhati
Secretary General
IASTAM India

Prof M Afshar Alam
Vice Chancellor
Jamia Hamdard, New Delhi

Prof. K. N. Udupa Award

For Contribution to Research in Ayurveda - Indigenous Systems of Medicine

Citation

Prof. Subir Kumar Maulik

IASTAM-India in memory of **Prof. K. N. Udupa**, is privileged to present this Award to you, **Prof. Kumar Maulik** for **Contributions in Research Ayurveda - Indigenous Systems of Medicine.**

Sir, you are an Emeritus Scientist, ICMR, New Delhi., Former Professor Pharmacology Department, AIIMS, New Delhi. You are of Fellow, International Academy of Cardiovascular Sciences, Canada, Former Fellow, Pulmonary Vascular Research Institute, UK and Member, the American College of Clinical Pharmacology, you are General Secretary, India Section of International Society for Heart Research.

Dr Maulik you are Member of several National Committees such as NITI AAYOG Committee, National Medical Commission, Standing National committee on Medicines (SNCM) (Subcommittee Hygiene and Healthcare product), Interdisciplinary Committee for inclusion of Ayurveda and Yoga Interventions for integrated management of Covid-19 in the National Clinical Management Protocol Covid-19;. 2020, Programme Advisory Committee Inter-Ministerial Cooperation program of CSIR, DBT and ICMR on 'Phytopharmaceutical' drug development; Project Review Committee meeting in Pharmacology, Medicinal plants, and Physiology, and many more.

You are a Chairman, Interdisciplinary Technical Review Committee (ITRC) of the applications/claims, Re-purposing of licence on patent & proprietary ASU & H medicines/ classical with new indication or, Ministry of AYUSH and, ICMR-National Task Force for "Research on Snake Bite in India" You were invited as ICMR representative member to the Scientific Advisory Committee of Drugs for Neglected Diseases Initiative (DNDi), Geneva, Switzerland, 2021.

Sir you have been Former Chairman, Expert Committee for Preparation of A Scientific Document on Proven Safety of Ayurvedic Classical Formulations, Ministry of AYUSH, Govt. of India Former Member, Technical Review Committee on developing Compendia on Safety Review Monographs on Medicinal Plants, Indian Council of Medical Research (ICMR), New Delhi Technical Review Committee on Quality Standards of Indian Medicinal Plants ICMR, New Delhi, Special Committee of the Center for Molecular Medicine, JNU, N Delhi, Programme Advisory Committee (PAC) for International Cooperation in the. area of life Sciences & Medical Biology, DST, Govt. of India.

Sir, you have to your credit 20 Books, 62 Publications, and 5 Research Projects guiding 7 PhD, 6 MD and 6 MSc scholars and been chosen as "Our Favorite Teacher" by MBBS students of AIIMS, New Delhi, 2002 with 28 years teaching (MBBS and MD) in All India Institute of Medical Research, New Delhi. You have contributed research on Cardiac ischemic injury, cardiac hypertrophy and heart failure and experimental Pulmonary Hypertension, Evaluation of cardio-protective properties of Medicinal Plants in the light of current knowledge of disease. You have conducted Clinical Trial of Medicinal Plant (a standardised extract of the stem bark of Terminalia arjuna) in patients of heart failure, Oxidative stress in pregnant women.

Congratulations on this stupendous effort and may the Almighty bless you with health and energy to continue to contribute to the research in the Indigenous Medicine.

Dr. C.K. Katiyar
President
IASTAM India

Dr. Kirti Bhati
Secretary General
IASTAM India

Prof M Afshar Alam
Vice Chancellor
Jamia Hamdard, New Delhi

Shri Mathuradas Parikh Award

For Excellence in the Ayurvedic Profession

Citation

Prof. Rakesh Sharma

IASTAM-India in memory of ***Shri Mathuradas Parikh*** *is extremely happy to present to you,* ***Prof. Rakesh Sharma*** *this* ***'Award for Excellence in the Ayurvedic Profession.***

Sir, you are President, Board of Ethics and Registration for Indian System of Medicine, National Commission for Indian System of Medicine (NCISM), New Delhi, and former Director of Ayurveda, with twenty-two years of teaching experience and thirty-six years of clinical experience.

You have been a former Director of Punjab Health Systems Corporation, Punjab, former Chairman, Board of Ayurvedic & Unani Systems of Medicine, Punjab; State Drug Licensing Authority; Chairman of State Drug Advisory Committee; former Vice Chairman, Punjab State Faculty of Ayurvedic & Unani Systems of Medicines; former Director of Herbal Health Research consortium Pvt. Ltd and former Member Secretary State Medicinal Plants Board.

Sir, you have been instrumental in organizing 14 State Level Arogya Melas in the State of Punjab under IEC (Institutional Ethics Committee) Schemes of GoI, Ministry of AYUSH and NRHM. Strengthening the DTL, State Drug Testing Laboratory Patiala, Punjab and initiated DTL (ASU) for standardization, quality control and efficacy of ASU Medicines. You instigated Ayurved Parv under Central Sector Scheme of GoI, Ministry of AYUSH reconnoitring lectures of Eminent Ayurvedic Scholars, Ayurved Industry Meet and exhibition of ASU pharmacies. You organized 100 Outreach AYUSH camps under NRHM/NHM

You are a key person in organizing the Training of Trainers Programme (ToT) Orientation of ASHAs/ANMs to the potential of AYUSH with respect to general wellness and Preventive Health Care including prevention of Diabetes Mellitus. Arranging G.M.P. Workshop at Jalandhar, Established a Herbal Garden of 7.5 acres at Dayalpur Sodian, Zirakpur, Patiala

In the Pandemic situation, you organized training for the prevention of COVID-19 for 22 master trainers who in turn trained 4567 Volunteers in the state. Distributed AYUSH Kawath, Medicines for COVID prevention and immunity boosters to approximately 8000 people in the state, including warriors from BSF Jalandhar, CISF staff Chandigarh, Punjab Police Headquarter staff and offices of the State.

Sir, you are one of our esteemed who has established A cluster Project at Ram Tirath Road, at Amritsar, A Panchkarma Center in Civil Hospital Mohali for Chronic diseases, You have established 14 ISM Wings at Civil Hospitals and other district Allopathy Hospitals in Punjab

Congratulations on this stupendous effort and may the Almighty grant you, health and a long life to continue your efforts as clinical expert so as to benefit the entire Ayurvedic fraternity.

Dr. C.K. Katiyar
President
IASTAM India

Dr. Kirti Bhati
Secretary General
IASTAM India

Prof M Afshar Alam
Vice Chancellor
Jamia Hamdard, New Delhi

SPEAKERS

Prof. Pulok Kumar Mukherjee is working as the Director, Institute of Bioresources and Sustainable Development, Department Biotechnology, Govt. of India, Imphal, Manipur, & Professor (On lien) Department of Pharmaceutical Technology, Jadavpur University, Kolkata, India. Prof. Mukherjee is working on several aspects of Translational Research on Botanicals with emphasis on Traditional medicine inspired drug development.

He has made enormous contributions to the development of integrated approaches for evidence-based validation of traditional medicine particularly those derived from medicinal plants and their translational components. He has contributed over 235 publications in peer-reviewed impact journals, several patents, and books on evaluation of botanicals. Prof. Mukherjee is a Fellow of the Royal Society of Chemistry, (FRSC) UK; Fellow of National Academy of Sciences, (FNASc) India; National Academy of Agricultural Science (FNAAS) India; West Bengal Academy of Science and Technology (FAScT) India. He has been honored with several awards and laurels from both the Government of India and abroad. His academic and research career has been outstanding, with globally acclaimed contributions on teaching and research on validation of medicinal plants, their formulation, and standardization, which are useful bioprospecting tools for the traditional medicine-based drug discovery program. Prof. Mukherjee is serving as Associate Editor of the Phytomedicine plus, Consulting editor, Pharmacological Research, Elsevier Science; Frontiers in pharmacology (Ethnopharmacology) and. He is the member of the editorial board of several International journals including Journal of Ethnopharmacology, Phytomedicine, Pharmaceutical analysis, Synergy; Phytochemical Analysis, World Journal of Traditional Chinese Medicine, India J Traditional Knowledge and many others. Prof. Mukherjee was served as the president, International Society for Ethnopharmacology, Switzerland. Further details are available at www.pulokmukherjee.in.

Drugs from nature and drugs from our ancestors - Multi-Targeted Therapeutics

Pulok K Mukherjee, Amit Kar

Institute of Bioresources and Sustainable Development, Department of Biotechnology, Govt. of India, Takyelpat, Imphal 795001, India
***Corresponding author:** director.ibsd@nic.in, www.pulokmukherjee.in

The ancient culture of India has worshipped and observed nature to develop high philosophies towards the liberation of humans. The traditional healthcare systems developed then are being practiced by the people of India at various levels of the life process. The ancient people used medicinal plants for the treatment and management of human wealth. As didactical science evolved, it

was revealed that Medicinal and aromatics plants contain chemically diverse phytomolecules, which have several therapeutic applications. However, this knowledge has been preserved through traditional healthcare practitioners on the basis of history of safe use and now modern world has appreciated these medicines for their unique chemical and biological therapeutic potential. Thus the importance of ethno-pharmacology and ethnomedicine has developed which depends on plant science, chemistry and pharmacology; along with the crucial involvement of different interdisciplinary scientific exploration of biologically active agents. The ethno-medicines have been using from the time enduring for the management of human ailments. Ethno-medicines are gaining global acceptance because of their less side effects and approach towards the treatment of diseases and also promote human health at large.

In several rural areas, Local health Tradition (LHT) is practiced for aiding towards the basic needs of primary healthcare system. LHT are the health practices, conveyed through an incredibly effective system of oral transmission inherited through family lineage for the management of health threats. The LHT are the repository of diverse, region, ecosystem and ethnic community specific, knowledge, skill and experience. In order to promote the use of ethno-medicines in different forms more particularly as the finished/marketed product intervention of modern state-of-the-art technologies including analytical techniques with target compound analysis (TCA), metabolite profiling to evaluate its quality control and standardization, which have potential impact on lead finding for the development of healthcare products. Evidence based documentation on safety, efficacy and quality of medicinal plants from different traditional medicines for development of herbal products based on their Ethno pharmacological claims. This approach will contribute to develop of standardized, synergistic, safe and effective medicinal plant based products with robust scientific evidence, which can be served as an effective new generation alternative therapeutics.

Prof. Ramesh K. Goyal, Vice-Chancellor, Delhi Pharmaceutical Sciences and Research University (DPSRU) has been the Vice-Chancellor of Maharaja Sayajirao University of Baroda, Executive Director (Research & strategies) at V ClinBio Labs., Chennai, Director (Pharmacology) at NMIMS University, Mumbai; Director ISF College of Pharmacy, Moga, Punjab and Professor at L. M. College of Pharmacy, Ahmedabad. Recently he has been given Honorary Professor of Stavropol State Medical University, Russia. He is Second non-Russian Professor being bestowed upon this title in 80 years of the University. He has over 41 years of experience in Teaching and Research particularly in Cardiovascular Pharmacology & Diabetes. He was a post-doctoral scholar and visiting scientist at in Canadian universities He is has been the Chairman of CRC of AICTE, Bhopal and Member, EC of AICTE, New Delhi. Dr Goyal has three patents, 18 books, over 325 full papers articles and book chapters. He has guided 44 Ph.D. and 182 M. Pharm. students. He is the recipient of 72 awards, including Best Pharmacy Teacher and Best Pharmaceutical Research Scientist from APTI and Life Time Achievement & Distinguished Service Awards from International Academy of Cardiovascular Sciences, Canada (IACS). He is the Fellow of eight professional bodies (FIPS, FIACS, FAMS, FIC, FICN, FNASc, FSCH, FIVSPT). He has been the President of Indian Pharmacological Society, Society of Pharmacovigilance, India and Indian Society of Hypertension. He is currently Council member of the IACS, Canada and the Vice President of IACS, (India Chapter). He has attended number of seminars, workshops and conferences as resource Person and also chaired various sessions. Dr. Goyal has delivered over 240 invited lectures in India and 31 lectures abroad. He has worked on anti-diabetic herbal plants from preclinical to clinical studies and identified biomarkers not only for quality assessment but also as leads for specific targets involved in the prevention of cardiovascular complications associated with diabetes. He has also been involved in research related to personalized medicine and new drug development through 505 B2 mode. He also served as the Expert member for the Indian Medicinal Plants Review being published by ICMR, New Delhi (2003-1016). Currently he is the member of the Scientific Advisory Group in herbal division of ICMR, Scientific Advisory Committee of Indian Pharmacopoeia Commission, Faridabad and Phytopharmaceutical Group of Central Drugs Standards Control Organization (CDSCO) New Delhi. He has also served as the Chairman of the many committees including Endosulfan Committee of Govt. of Gujarat and Oxytocin Committee of the CDSCO.

Biomarkers based drug discovery and development through traditional medicine system: Some success stories

Ramesh K. Goyal

Vice Chancellor, Delhi Pharmaceutical Sciences and Research University, New Delhi-110017, India
***Corresponding author**: goyalrk@gmail.com

In past 20 years, world over has been equipped with a plethora of molecular targets, identified from the sequencing of the human genome and likewise huge number of phytochemicals have been identified, many of being biologically active and emerging for therapeutic purpose. These developments have led to not only standardization of medicines of herbal through specific biomarkers but some of the biomarkers have been utilized for optimization into candidate drugs. Currently, the drug discovery as such utilizes biochemical surrogate markers including enzymes, receptors and genes.

In the old times, up to mid-20th century, herbal drug discovery never employed the drug targets studies. It has always been proposed that the documented evidence of efficacy of the herbal drug should be utilized for the development of new drug entities. Translational phytopharmacology approach for herbal research utilizes 'Hits' from plants are being taken as primary active compounds with non-promiscuous binding behavior, exceeding a certain value of threshold in a given assay. The Hits are tested using different pharmacological and biochemical/biotechnological tools followed by dose response curve generation, synthesis feasibility and intellectual property evaluation to for investigation as biomarkers. 'Hit ranking and clustering' are also utilized for molecular modeling, (QSAR and docking studies). This phase is followed by Lead optimization phase where in lead compounds, new analogs with improved potency, are synthesized and physiochemical/metabolic properties suggestive of reasonable *in vivo* pharmacokinetics is investigated.

Activity guided herbal drug research has been one of the strategies with which we have started working on the plant *Enicostemma littorale* and could isolate active compound from *Enicostemma littorale* 'Swertiamarin' and studied anti-diabetic activity. This compound was proposed to be the lead compound to develop newer anti-diabetic drugs and it provided newer targets and newer lead compounds from plants for anti-diabetic activity. Similarly, having established 5-HT receptors as the target, common herbal preparation, the aqueous extract and the juice of *Zingiber officinale* was studied for anti-diabetic activity and could identify lead biomarkers for the development of the newer anti-diabetic drugs.

During the pandemic of COVID-19 we could identify certain plants reported in Ayurveda as the *Rasayana*, and out of them *Solanum nigrum* L. to be the most effective in management of COVID-19. The results were correlated with published pharmacological studies. Finally, we could develop a formulation for respiratory and other complications like those seen in COVID are being treated with this drug.

In conclusion, Biomarkers Based Drug Discovery and Development through Traditional Medicine System can be considered as an appropriate strategies not only to establish the safety and efficacy but also the parameters for standardization.

Professor Dr. Mohammad Kamil, M.Sc.; M.Phil.; Ph.D.; D.Sc.; Chartered Chemist(U.K.) and Fellow Royal Society of Chemistry (London), worked in various capacities, as In-charge -Drug Standardization lab. CCRUM, Ministry of Health -India, Associate Professor at Hamdard University, India; Professor & Head Department of Pharmacognostic Science, Zayed Complex for Herbal Research & Traditional. Medicine(ZCHRTM), Ministry of Health, UAE (1996-2010); Head TCAM Research at ZCHRTM, Department of Health(DOH)Abu Dhabi (2010-2020), presently working as Director General, Lotus Holistic Healthcare Institute, Abu Dhabi, UAE since March'2021.

He is a recipient of many prestigious honors & awards viz Young Scientist's Award, India(1998); Common Wealth Award-London(1992); Convention Award of Chemical Society-India(1993); Hakim Ajmal Khan Shield (CCRUM-Govt. of India at Grant Medical College (1992); Academic Exchange Fellowship from Association of Common Wealth Universities –London(1993); Acted as an expert on the panel of Union Public Service Commission (UPSC), India,2000. ; Man of the year 2002, ABI, USA; Hakim Ajmal Khan Global Award in Unani Medicine, India(2014); Focal Point of WHO Collaborative Sheikh Zayed Research Centre, Abu Dhabi for 8 consequent years; Sheikh Zayed International Award in Herbal Research (2020) and various other prestigious honors & awards. Dr. Kamil produced 20 Ph. D. and M.Phil. students besides a large number of M. Sc. and 40 Interns. More than 550 research papers in reputed journals & presentations at international conferences are at his credit, chaired a no. of scientific sessions, delivered talks as plenary, and invited speakers at various International Conferences. Associated with the publication of many books; authored six books and seven chapters in different books. His name is cited for significant Research in: "Muslim in India "(1994): Contributions of Indian Muslims in Plants Sciences (Research contribution in Plant Sciences, published in 1999); his research work is cited widely in more than 7000 places in books viz, Advance in research(Chapman and Hall, London, New York); Dictionary of Natural Products- (Chapman and Hall, London, New York); Glimpses in plant research Vol. XI, (Today and Tomorrow Publication) India; Flavonoids -Advances in Research since 1986: Chapman and Hall, Tokyo, Melbourne. ; Compendium of Medicinal and Aromatic Plants, Vol. II, ICS, UNIDO, Encyclopedia of the Medicinal Plants of the UAE, Vol. I &II; Journals; Research Gate, Academia, Philadelphia Citation index, and various other books and Ph.D. theses.

He has been associated with the World Health Organization (WHO) in the revision of the Benchmark for International Standards of Unani Medicine Terminology and Training of Unani Medicine, as its drafting expert and their subsequent reviews. He Chaired a number of scientific sessions and delivered talks as plenary and invited speakers at various International Conferences/Seminars and Symposia. Visited academically almost the whole Globe. Fellow & Member of various International Scientific societies; Advisory

Boards & Referee for many International journals; e.g. Journal of Complementary and Integrative Medicine, The Berkeley Electronic Press; Journal of Food Composition and Analysis, Elsevier Publication; Reviewer of a number of International Journals; Honorary Member, International Centre for Integrated Development Research-Nigeria; Member of Natural Product Registration Committee MOHAP, UAE,(1997-2020); Member of Higher Complementary Medicine Committee –MOHAP-UAE,(1997-2020); Member Evaluation Committee for TCAM Practitioners & Therapists -MOHAP, UAE(2000-2020). With a 10-year UAE Golden Visa as a Talented person and many other feathers in his cap, Dr. Mohammad Kamil is now a global ambassador of TCAM based in the UAE.

Traditional Herbal Medicine: Quality and Safety

Mohammad Kamil

Director-General, Lotus Holistic Health Institute, Abu Dhabi, UAE

Modern chemical and pharmacological research have greatly contributed to our understanding of Botanicals. The quality of herbal products may be controlled by understanding their pharmacognosy and applying modern pharmaceutical methods. Herbal Products may have intrinsic toxicity. It can also be contaminated and adulterated with spurious plant materials and synthetic drugs. Interactions with prescription drugs are also possible. A lot of work has already been carried out in this respect. However, there are certain dark recesses that have to be illuminated using high throughput drug technology, besides detailed effort and research is needed to improve the quality and safety of herbal products.

In spite of recent developments in antibiotics and newer synthetic drugs, a vast majority of people depend on traditional medicines for their primary health care needs and it can safely be presumed that a major part of traditional therapy involves the use of plant extracts or their active principles. In recent years with ever-growing commercialization in the field of herbal medicines, there has been an instant demand for quality control of the drugs used in this system. The studies on the identity, purity, and quality of the genuine drug will enhance information in checking the adulteration. A set of standards would no doubt be a deterrent to substitution and adulteration and also an aid for 'Drug law Enforcement.

In the present talk, an attempt has been made for a sequential study of the Quality Control of Herbal Products, from Cultivation, Collection, and Post-Harvest Practices to Assure the Production of Quality Raw Botanical Materials. It includes authentication, identification, and purity Assessments of Botanical Raw Materials, Ingredients, and Products. The present talk dealt starting from the Selection of Medicinal Plants; Good Agricultural Practices (GAP);

Cultivation; Good Field Collection Practices(GFCP); Organized and Unorganized Drugs; Source and Period of Collection; Identification; Storage; Chemical Standardization; Assay; Current Good Manufacturing Practices (CGMP); Pharmacological study to Clinical Approach, with special reference to maintaining Standardization at each and every stage.

TLC Fingerprinting of the successive extractives using Accelerated Solvent Extractor (ASE), spectroscopic and spectrometric techniques e.g. IR, UV, TLC & HPLC, GC/MS, LC/MS, phytochemical screening, quantitative analysis of inorganic constituents through Atomic Absorption Spectrometer and over an above discussed in detail the challenges of standardization with special reference to marker compounds in plant species and their fingerprinting. An emphasis has been given to the protocols which are required for the Registration of Herbal products. The talk includes the general and specific approaches toward establishing the Quality Safety and Efficacy of Herbal Medicinal Products (HMP) with available Modern Technologies.

Safety of Ayurveda formulations: Evidence based approach

N. Srikanth[1], Shruti Khanduri[2], Bidhan Mahajon[3]

[1]Deputy Director General, [2&3]Research Officer (Ayurveda), Central Council for Research in Ayurvedic Sciences, Ministry of AYUSH, Janakpuri, New Delhi-110058

The tradition of *Ayurveda* has evidently facilitated millions of people to achieve healthier life. Safety of medicines and treatments has always been on high precedence in the practice of Ayurveda. *Acharya Charaka* has clearly mentioned "Even a strong poison can become a tremendous medicine if administrated properly; on the other hand, even the most useful medicine can act like a poison if handled imperfectly" which is an unwavering verse among the all discipline of medicine. In recent times, Ayurveda has gained a wider acceptance globally and it would be appropriate to document the safety aspects of Ayurveda formulations established through preclinical and clinical studies suitably. This paper highlights the CCRAS contribution in the validation and generation of tangible evidence on their safety of various Ayurveda formulations following the standard guidelines. Different multidimensional studies have been conducted under Intramural Research Scheme and Collaborative Research with prestigious organizations viz. ICMR, CSIR, and other reputed Universities. Data has been gathered starting from multi centric preclinical safety/toxicity studies (In-vitro & In-vivo), clinical studies, pharmacoepidemilogical studies etc. Till date Council has validated 150 Ayurveda classical formulations under different clinical conditions for their clinical safety and efficacy. Further, 19 Ayurveda medicines specifically metals and mineral based medicines have been studied in experimental models to generate the evidence on their safety adopting prevalent guidelines. A Retrospective pharmaco-epidemiological cross sectional analysis of prescribed 15 *Rasaushadhis* involving more than one lakh patients demonstrated their safety. Evidence based approaches on the safety of Ayurveda medicines will not only meet the global requirements but also may play a pivotal role in integration of these medicines in the main healthcare system.

A New dimension to Phyto-extracts, for better therapeutic value

Sanjay Tamoli

CEO, Abhinav Health Care Products Pvt. Ltd, Mumbai
Corresponding author: sanjaytamoli@hotmail.com, abhinav@abhinavayu.com

Standardized Herbal Extracts (phyto-extracts) being extracted using various solvents are primarily standardized based on extractive phyto-constituents (usually only marker compounds). While standardization ensures consistent quality standards avoiding natural variables like geography, climate etc. it does not essentially reflect and ensure efficacy. Herbs contain a variety of essential trace elements (ETE) in significant and measurable concentrations. These ETEs play a vital role in the overall pharmacological action and thus therapeutic efficacy. While most of the scientific studies on medicinal plants primarily focus on their organic contents the role of trace elements is usually undermined. Scientific studies have proven the affinity of trace elements to particular tissue/cell types as well.

The present invention discusses a technology to Fuse, Micronize and Bio-activate (FMB) standardized herbal extracts with essential trace elements. Fusion ensures replenishment of extract with their respective cofactor (ETE) lost during conventional extraction process. Micronization provides greater surface area of the extract matrix, enhancing absorption and thus greater efficacy while bio-activation facilitates absorption of the active moiety of herbal extract at the target site. It also facilitates stable complexes of the ETE with the phyto-constituents ensuring higher stability of the extract material. In-vitro and In Vivo studies on FMB extracts of *Curcuma longa, Withania somnifera, Glycyrrhiza glabra and Tinospora cordifolia* have been studied and shown significantly better anti-oxidant, anti-inflammatory and immunity boosting effects.

Dr Mukhlesur Rahman is Subject Area Head of Drug and Chemical Sciences at the University of East London (UEL). He leads the Medicines Research Group at UEL. He developed both BSc (Hons) Pharmaceutical Science and MSc Pharmaceutical Science courses at the University of East London. He is a Fellow of the Higher Education Academy (FHEA), the Royal Society of Chemistry (FRSC) and the Royal Society of Biology (FRSB). With PhD in Natural Pro ducts Chemistry from the University of Strathclyde and over 3 years postdoctoral research experience from the University of London (The School of Pharmacy; currently known as UCL School of Pharmacy), Dr Rahman's research focuses on anti-infective drug discovery from natural sources. His research interests include bioassay directed isolation, purification and identification of antibacterial metabolites from medicinal plants and microbes as well as the synthesis of their analogues. He has been working on numerous medicinal plants from different parts of the world for the isolation and characterization of bioactive metabolites from a variety of structural classes including anti-MRSA compounds and efflux pump inhibitors. In order to confirm the structures of the compounds of natural products, Dr Rahman exploits high field NMR spectroscopy and mass spectrometry. He has also carried out ethnopharmacological surveys to explore the traditional plants that are being used to treat infections. He has published 88 research articles in peer review journals and attended several international conferences in UK, USA, Switzerland, Austria, Greece, Bangladesh and India. He supervised PhD and MRes students, postdoctoral research fellows and professional fellows at the University of East London. His current PhD and MRes students are focusing on the characterization of anti-infective and anticancer compounds from medicinal plants. At the University of East London, he leads Medicines Research Group. Previously at Liverpool John Moores University he was Phytochemistry and Phytotherapy section lead of the Centre for Natural Products Discovery.

How natural products could contribute to tackle the global challenges of antimicrobial resistance (AMR)

Mukhlesur Rahman

School of Health, Sports and Bioscience, University of East London, Stratford Campus, Water Lane, London E 15 4LZ, UK
Corresponding author: m.rahman@uel.ac.uk, Tel:+44-2082234299

Antimicrobial resistance (AMR) is a vital problem of today's healthcare. Following the accidental discovery of the first antibiotic, Penicillin, from a mould *Penicillium notatum*, enormous number of antibiotics (natural, semi-synthetic and synthetic) have been discovered which transformed healthcare system contributing towards the successful treatment of various infectious diseases. However, microorganisms having the capability to mutate can resist

the antibiotics that have used to combat them. Such antibiotic/ antimicrobial resistance has increasingly become huge global problem. Self-medication and irrational uses of antibiotics in some developing countries have made the situation even worse in the developing countries. During the COVID pandemic, the clinical uses of antibiotics to treat secondary infections could have also contributed to AMR. If no appropriate action is taken into consideration to tackle antimicrobial resistance, it has been predicted that AMR will be number one killer by 2050 with approximately 70 million deaths per year. Therefore, scientists are carrying out research to search for novel and safer antimicrobial agents from natural sources (plants, microorganisms and marine sponges) to tackle the terrible issue of AMR. The lecture will outline the causes of AMR, role of traditional medicine and microbes in drug discovery using bioassay directed isolation and identification approaches. Compounds to be highlighted during the lecturer represent diverse chemical classes such as alkaloids, phenolics, flavonoids and isoflavnoids, lignans and terpenoids. Some compounds mainly acylphloroglucinols exhibited strong antibacterial activities against a panel of clinical isolates of Methicillin resistant Staphylococcus aureus (MRSA). The lecture will also cover total synthesis of a natural acylphloroglucinol and a series of its analogues.

Dr. Abdur Rauf is an Associate Professor in the Department of Ilmul Advia, Aligarh Muslim University, Aligarh and serving this department since 2009. He had also worked as Assistant Professor in the Department of Ilmul Advia, Faculty of Medicine, Jamia Hamdard, New Delhi from 08.10.2004 to 03.03.2009. He has over 16 years of teaching experience at Undergraduate and Post graduate levels in the field of Ilmul Advia. He is an eminent expert to vet the translation of Arabic and Persian resource Classical Books in Traditional Knowledge Digital Library, NISCAIR, Central Council for Research in Unani Medicine, New Delhi since July 2007. He has participated in three prestigious International Conferences abroad (Sri Lanka 2013, Bangladesh 2018 & Uzbekistan 2019) and various National & International Conferences in India. He is a member of different Academic and Research organizations. He has two books, four book chapters / conference proceedings, 64 research papers and 06 popular articles to his credit. Name of some reputed journals in which his works published are International Journal of Applied Biology and Pharmaceutical Technology, Australian Journal of Herbalism, Indian Journal of Traditional Knowledge [IJTK], Hamdard Medicus Pakistan, and Hippocratic Journal of Unani Medicine, Central Council for Research in Unani Medicine New Delhi. Eleven students had completed their theses under his direct supervision.

Holistic approach of Unani medicine with special reference to drug temperament and its relevance in therapeutics

Abdur Rauf

Department of Ilmul Advia, Ajmal Khan Tibbiya College, Aligarh Muslim University, Aligarh, 202002
Corresponding author: abdurraufmd@yahoo.com

Unani Medicine strongly believes in holistic approach by using the crude dosage forms of drugs attributed with the scheme of Mizaj, diagnosing the disease keeping in view of morbid humours and temperament and treating the disease by restoring balance to the physical, mental, emotional and spiritual aspects of man, using lifestyle modification, diet and drug to have an effect on cure. Mizaj is one of the cardinal fundamentals of the Unani Medicine which is associated with all the entities prevailed in the universe including human beings (normal and/or sick body) and drugs. It has been conceptualized elaborately by the ancient philosophers; rationalized by the medical scientists of medieval ages and adapted by the laterally scholars into their practice. Unani physicians classified the drugs into four degrees (I, II, III and IV) depending upon the amount of constituents present in the drug, consequently producing the potency and intensity of effects, they exhibit after administration into the body. The temperament and its degree being the central to the drug action play an

important role in showing the desired therapeutic effects. Higher the degree of temperament produces higher the drug effect. The doses of the drugs are also recommended in accordance with the degree of temperament. During treatment as well as preventive measures, physicians mainly concentrate upon the severity of the pathological state of the body; propose the principles of treatment followed by the prescription based on the drugs attributed with similar intensity of disease conditions. Keeping in view of the stages of pathological sate of sick persons, Unani physicians categorized the drug temperament into four degrees. The paper is aimed to discuss in details the philosophical and scientific basis behind the classification of temperament of drugs into four degrees.

Dr. Prakash Rambhauji Itankar, Ph.D., M. Pharm. (Pharmacognosy), D.N.Y.S. (Diploma in Naturopathy and Yogic Science), presently serving as Professor at Department of Pharmaceutical Sciences, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur. He is a recipient of Prestigious "SFE- Outstanding Local Chapter Award-2018" as Coordinator, "Ethnopharmacology Outstanding Service award 2015" of Society for Ethnopharmacology India (Affiliated to International Society for Ethnopharmacology, UK) and "Best Teacher Award 2018" of Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur. He has 06 yrs of Industrial and 19 years of academic experience. He has 57 National and International Publications, filed 04 patents, guided 09 students for Ph. D. He has guided 72 M. Pharm. Students and has Co-Guided several M. D. Ayurveda students. He is working for socializing the traditional claims through ethnopharmacology and scientific validation of drugs from natural origin or their formulations. He is also engaged in research for exploring new drug molecules, novel combinations, novel dosage forms, seeking patents, imbibing entrepreneurship, supporting and bridging the gap of scientific ambiguity amongst the practitioners and end users.

"Lok Swasthya Parampara Conservation": A Practical Approach

Prakash R. Itankar

Department of Pharmaceutical Sciences
Corresponding author: 9766191818, prakashitankar@hotmail.com

The *Nagoya Protocol focuses on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS) to the Convention on Biological Diversity.* The Nagoya Protocol on ABS was adopted on 29 October 2010 in Nagoya, Japan and entered into force on 12 October 2014, 90 days after the deposit of the fiftieth instrument of ratification. Its objective is the fair and equitable sharing of benefits arising from the utilization of genetic resources, thereby contributing to the conservation and sustainable use of biodiversity. The Nagoya Protocol also covers traditional knowledge (TK) associated with genetic resources that are covered by the CBD and the benefits arising from its utilization. Utilization includes research and development on the genetic or biochemical composition of genetic resources, as well as subsequent applications and commercialization. However, The main threats to biodiversity in India include: habitat fragmentation, degradation and loss; over-exploitation of resources; shrinking genetic diversity; invasive alien species; declining forest resource base; climate change and desertification; impact of development projects; impact of pollution.

The health healing arts of the traditional societies in India are an ancient cultural mixture that has adapted to societal and environmental changes, as

well as centuries of interactions with other cultures. Traditional healing treatments usually involve a mixture of ritual and herbal remedies using locally available ingredients such as tree bark, sap, leaves, roots, plant stems, flowers, minerals, and various animal products. These healing practices not only provide remedies for common ailments but also demonstrate a thorough knowledge of the environment and concern for the conservation and sustainable use of medicinal plants. Traditional healing is still a functioning healthcare system in many areas due to the high cost of Western medicine coupled with the unavailability of modern healthcare facilities. However, with the advent of advancements in modern India, the art of traditional healing suffers from the global emphasis on Western culture and the disinterest of younger generations in traditional knowledge and practices. The great store of indigenous knowledge held by traditional healers is in danger of extinction with this current generation. Throughout history, traditional healers were highly respected community experts and leaders. Their techniques have evolved over centuries of trial and error, and have been refined through generations of family apprenticeship. Unfortunately, the traditional practices are no longer being passed down through society and a whole volume of cultural heritage is in danger of being lost forever. This chance to study and document the cultural and traditional knowledge of these last experts is an irretrievable opportunity to preserve the knowledge and experience of a culture struggling to preserve its healing traditions. We as compassionate scientific community are beginning to see the importance of documenting the healers who have been doing trials from the beginning, and who have amassed invaluable research throughout their culture's history. The loss of centuries of research of botanical remedies is immeasurable. Agricultural communities, given the opportunity to share their knowledge, may perhaps grow these medicines as a crop that leads them out of economic depression and opportunities for international humanitarianism and a platform for botanical research in the field may be created. This research will be compiled and used as the basis for ensuring the survival and transmission of vanishing indigenous knowledge. The resulting information gathered will be utilized to increase sustainability through economic development based on indigenous medicines from the region. As the benefit of these culturally important folk remedies is growing, their acknowledgement and responsibility toward the contributions of thousands of years of traditional medicine has become even more apparent.

Dr. Sitesh C Bachar is serving as Dean, Faculty of Pharmacy and a Professor in the Department of Pharmacy, University of Dhaka, Bangladesh. He joined in the Department of Pharmacy, Faculty of Pharmacy as Lecturer in 1997. Before joining to the Department of Pharmacy, he received his B.Pharm (Hons) and M.Pharm degrees from the University of Dhaka with credential. Professor Bachar was awarded a PhD in Pharmacy from Jadavpur University, Kolkata 700 032, West Bengal, India in 1996.

Professor Bachar, is a well recognized medicinal chemist, with particular expertise in the synthesis of indan-based anti-inflammatory, analgesic, plants growth regulatory compounds, and structure activity studies. He is an outstanding medicinal chemist with pharmacy educational background. He also possesses an especial expertise in isolation, purification and pharmacological evaluation of Bangladeshi traditional and herbal medicines and their quality. Professor Bachar has been successful in securing a number of research grants to support his research. He is an innovative researcher as well as an accomplished teacher in higher education sector. He has a keen and objective driven approach in whatever he does. As an academician and experienced in hospital and clinical pharmacy management, Prof. Bachar has implemented the clinical and hospital pharmacy training in Bangladesh for his students at Dhaka Medical College Hospital.

Dr. Bachar has the opportunity to publish several publications in high-impact international journals in the area of medicinal and natural products chemistry. Over the years, Prof Bachar has shown his ability to sustain high quality research activities, excellent academic profile and a great deal of collaborative skills. His team-work and motivating ability is evident from his research, engaging a number of collaborators from various research groups from home and abroad. Prof. Bachar is a member of various professional and volunteer organizations. He has also journal editorial advisory memberships, grant reviewing and journal article reviewing expertise.

Bangladeshi medicinal plants and their bioactive metabolites against SARS-CoV-2, HIV, and HBV

Sitesh C Bachar[1*], Kishor Mazumder[2], Ritesh Bachar[3], Asma Aktar[2], Mamun Al Mahtab[4]

[1]Department of Pharmacy, Faculty of Pharmacy, University of Dhaka, Dhaka-1000, Bangladesh (bacharsc@du.ac.bd; bacharsc63@gmail.com)

[2]Department of Pharmacy, Jashore University of Science and Technology, Jashore-7408, Bangladesh (kmazumder@just.edu.bd)

[3]Department of Pharmacy, School of Science and Engineering, University of Information Technology and Sciences, Baridhara, Dhaka-1212, Bangladesh (riteshrick93@gmail.com)

[4]Department of Hepatology, Bangabandhu Sheikh Mujib Medical University, Dhaka-1000, Bangladesh (shwapnil@agni.com)
***Corresponding author:** bacharsc@du.ac.bd; bacharsc63@gmail.com

Currently, viral infection is the most serious health issue which causes an unexpected higher rate of death globally. Many viruses are not yet curable, such as corona virus-2 (SARS- CoV-2), human immunodeficiency virus (HIV), hepatitis virus, human papillomavirus, and so others. Furthermore, the toxicities and ineffective responses to resistant strains of synthetic antiviral drugs have reinforced the search for effective and alternative treatment options, such as plant-derived antiviral drug molecules. Therefore, in the present review, an attempt has been taken to summarize the medicinal plants reported for exhibiting antiviral activities available in Bangladesh along with discussing the mechanistic insights into their bioactive components against the three most hazardous viruses, namely SARS-CoV-2, HIV, and HBV. The review covers 46 medicinal plants with antiviral activity from 25 families. Among the reported 79 bioactive compounds having antiviral activities isolated from these plants, about 37 of them have been reported for significant activities against varieties of viruses. Hesperidin, apigenin, luteolin, seselin, 6-gingerol, humulene epoxide, quercetin, kaempferol, curcumin, and epigallocatechin-3-gallate (EGCG) have been reported to inhibit multiple molecular targets of SARS-CoV-2 viral replication in a number of in silico investigations. Besides, numerous in silico, in vitro, and in vivo bioassays have demonstrated that EGCG, anolignan-A, and B, ajoene, curcumin, and oleanolic acid exhibit anti-HIV activity while piperine, ursolic acid, oleanolic acid, (+)-cycloolivil-4′-O-β-d- glucopyranoside, quercetin, EGCG, kaempferol, aloin, apigenin, rosmarinic acid, andrographolide, and hesperidin possess anti-HBV activity. Thus, the antiviral medicinal plants and the isolated bioactive compounds may be considered for further advanced investigations with the aim of the development of effective and affordable antiviral drugs.

Assessment of *Mizaje Advia* of Unani drugs

Ghulamuddin Sofi

Ilmul Advia, National Institute of Unani Medicine, Banglore, Karnataka

Mizaje Advia is a core concept of Unani Pharmacology that helps in understanding the pharmacological actions of a drug. The concept has been described in details in Unani medicine and a lot of literature is available to assess the *Mizaje Advia*. However, there is a degree of subjectivity in the assessment parameters, which are amenable to modifications to make theme empirical. The objective of the paper was to evaluate *Mizaje Advia* in an objective way. Moreover, protocol for verifying the *Mizaje Advia* in Humans is attempted conforming present methodologies. Study surveyed the Unani literature for various *Alamat* (Predeterminants of Mizaj). *Mizaj Advia bil Qayas* was assessed from Ibn Sina description of the determinants for *Mizaj* and validation of the same, which is done in humans, was detailed in the form of protocol(s) that suit the requirements of Ist phase clinical trials albeit in normal human subjects. Empirical methods for taste, color, and smell for assessment of *Mizaje advia bil qayas* have been detailed and assessment of various *Alamat* of *sui Mizaj* have been enumerated with their empirical assessment methods that served to verify *Mizaj bil Qayas*. There is fair possibility of assessment of *Mizaje Advia* for any substance that is administered in the human body and the same may be developed as a drug. It will also help in validation of the Mizaj described in Unani literature.

Dr. Rahul Singh born on 22nd September 1969 is Ph.D. in Organic Chemistry from University of Allahabad, Uttar Pradesh. Dr. Singh has more than 28 years' experience in Quality Management System, Method Development & its Validation, Standardization of Ayurvedic/Herbal/Natural Products, Isolation and Characterization of Phytochemicals, Extraction techniques, Development of Quality parameters for Herbal/Ayurvedic/Natural, Foods, Personal Care & Home Care products. Dr. Singh has worked at India's best Research and Development driven companies Like Lupin Laboratories as Scientist (1994-2002), Ranbaxy Laboratories Ltd, Gurgaon as Senior Group Leader (2002-2009), Dabur India Ltd as Head – R&D Analytical of Dabur Research and Development Centre, NCR Delhi (2009- 2013). Currently Dr. Singh is Head, Corporate Analytical Design Excellence at Emami Ltd. at Kolkata, India.

Dr. Singh is member of Herbal Products and Crude Drugs Committee of Indian Pharmacopoeia (IP), Expert Group for "*Establishment of GMP accredited Pilot Scale Extraction with QA&QC Facilities For Development of Herbal or Phytopharmaceutical products from the Medicinal Plants of NE India*" (Department of Biotechnology, Ministry of Science & Technology, Government of India). He was also member of Unani Pharmacopoeia of India. Dr. Singh has 12 patents to his credit and has published more than 40 research papers and also developed more than 40 monographs for IP & USP.

Herbal drug standardization and recent advances

Rahul Singh

My presentation will be focused on the following key topics:

Herbal Products

Definition, Classification Types

Standardization & Quality Control

Botanical Characterization; Phytochemicals/Marker Compounds; Fingerprint Profile; Quantitative Analysis; Contaminant Analysis etc.

Recent Advances

DNA Fingerprint Profile/Bar Coding; TLC – Bio-Autography; Phytopharmaceuticals – A New Class of Herbal Products

Dr. Debprasad Chattopadhyay obtained his PhD in 1989 from Jadavpur University, after completing Masters in Botany (Microbiology). He received Post-Doc training at London Hospital Medical College and Statens Serum Institute, and joined ICMR-Regional Medical Research Cent re Port Blair in 1993. In 1997 he moved to ICMR-Virus Unit Kolkata as Scientist and joined National Institute of Traditional Medicine Belagavi as Scientist-G & Director in 2016. Establishing personal contact with diverse ethnic communities Dr Chattopadhyay translated ethnomedicinal wisdom of tribes into modern leads by scientific validation of tribal medicines, since 1994. Validation of seventeen ethnomedicinal formulas with the isolation of compounds, establishing mode and mechanism of action, along with the safety and animal efficacy demonstrated antiviral, antimicrobial, antioxidative, wound-healing, anti-inflammatory, immunomodulatory and sperm-motility inhibiting activities. Moreover, his work on common viral infections, natural anti-HSV analog; chemosensor(s) and probe for live-cell imaging, ATP-sensing, detection of water pollutant and risk factors for neurodegenerative diseases is globally accepted with 118 *Research papers* in renowned peer-reviewed Journals, Reviews, Chapters and Books. He has seven *Patents* and four technologies under trial, and published 52 popular science articles. D Chattopadhyay has received several awards, serve as faculty and research guide of Universities, produced ten PhDs and guiding several students.

Phyto-antimicrobials and its application potential in infections

Joyeta Ghosh[1], Partha Palit[2], Subhasish Maity[1], Jyoti Das[3], **Debprasad Chattopadhyay**[1,4,5]

[1]Department of Health Research, NSHM Knowledge Campus, 124, 60, Basanta Lal Saha Road, Tara Park, Behala, Kolkata, West Bengal 700053, India

[2]Department of Pharmaceutical Sciences, Assam University, MQR2+36C, Silcoorie Grant, Assam 788011, India

[3]Scientist F, Parasite-Host Biology, ICMR-National Institute of Malaria Research, Dwarka, New Delhi, India

[4]Former Director & Scientist G, ICMR-National Institute of Traditional Medicine, Nehru Nagar, Belagavi 590010, Karnataka

[5]Former Scientist, ICMR-Virus Unit, Now ICMR-National Institute of Cholera & Enteric Diseases, P-33, CIT Rd, Subhas Sarobar Park, Beliaghata, Kolkata 700010, India
Corresponding author: 00913323537424, debprasadc@gmail.com

Scientific validation and the integration of traditionally used medicinal plants with contemporary therapeutics constitute a big avenue for global health research, particularly against diseases with narrow therapeutic window or difficult-to-treat. Most common antibiotics are ineffective in many infections; while several emerging or re-emerging diseases do not have proper therapeutics. Thus, to face this global threat medical science are in search of alternative or new agents. Few decades of global studies showed that several secondary phyto-metabolites that help in plant defense can also help human by interfering with specific molecules of microbial to human cells; fight oxidative stress, protect UV-damage and modulate cell signaling pathways. This presentation will portray selected multitargeted wide-spectrum phyto-antimicrobials showing potential against pathogens by altering or damaging cell wall to cell membrane to cell lysis, as well as protein and enzyme inactivation to denaturation and interfere with microbial replication with selected in-vivo, and ex-vivo model and human trial.

Name: Dr. N. Zaheer Ahmed
Age: 55 years
Present Designation: Deputy Director (Unani)
Present Address: Regional Research Institute of Unani Medicine- Chennai
Institutional (Central Council for Research in Unani Medicine)
Ministry of Ayush, Govt. Of India
Qualifications:

- B.U.MS, Govt Unani Medical College, University of Madras, Madras
- M.D (Unani), Moalejath (Gen Med), National Institute of Unani Medicine
- R.G.U.H.S, Bangalore, India
- C.H.R.F, Health Research, N.I.E, I.C.M.R, Chennai
- DHM, Hospital Management, NIHFW, M/o H & FW, Govt. Of India

Professional Experience: 30 Years
Joined CCRUM as Research Asst (U) in 1992
Awards and Other Recognitions Received:

- **Shifa ul Mulk Hakim Syed Maqdoom Ashraf** Gold Medal for securing highest percentage in Final yr B.U.M.S in 1990.
- **Moulvi Hakim Syed Mazherullah Madani** Gold Medal for securing highest marks in Moalejath in Final yr B.U.M.S in1990 by Niamath Science Academy, Chennai.
- **Awarded Gold medal for "Best Researcher in Unani Medicine"** from Tamil Nadu during National conference on Unani Medicine at University of Madras, Chennai by Hamdard Laboratories, New Delhi as part of its centenary year celebrations on 21-01-2007.
- **Awarded Best Paper Presentation** from Unani stream in 1st International AYUSH conference & Exhibition 2017, 8-11th Nov at Dubai, UAE.
- Awarded **"Best Research paper Award"** in Literary Research Category during Unani Day held at New Delhi on 11th Feb 2018.

Research Publications: 78
PhD (Moalejath - Unani Medicine) Examiner for NIUM, Rajiv Gandhi University of Health Sciences, Bengaluru since 2019
Conferences / Seminars / Workshops attended: 60
Research Papers presented: 34
Public/Guest lecturers delivered: 55
No of Training programmes attended: 20

Concept of Mizaj with reference to contemporary medical sciences and its relevance in clinical practice

N Zaheer Ahmed

I. Concept of Mizaj
II. Scientific approach to Mizaj
III. Application of Mizaj and its Relevance in clinical practice
IV. Know Your Temperament App

Concept of Mizaj

- Basic Constituents of life-Arkaan/Metaphysical matter/Supra physicals
- Classical Concept
- Importance
- General classification
- Classification in terms of individual Mizaj
- Determination of Mizaj-Ajnase Ashra
- Physiological aspect of Mizaj

II. Scientific approach to Mizaj (Contemporary medical science)

- Previous studies
- Physiological variations and Mizaj
- Concept of pharmacogenetics
- Genetics and Mizaj
- Enzymes and Mizaj

III. Application of Mizaj and its Relevance in clinical practice

Treatment according to Mizaj of patient

- Age
- Sex
- Geographical location
- Season
- Ghalbe Akhlat
- Occupation
- Diet
- Drugs
- Disease
- Aaza, Quwa and af'al
- Istifraghe fuzla

IV. Know Your Temperament App

Dr. Pramod J. Hurkadale, Professor, Department of Pharmacognosy, KLES College of Pharmacy, Belagavi, Karnataka, India has completed his B. Pharm degree from Kuvempu University, Shivamogga obtained his M. Pharm degree with distinction from Rajiv Gandhi University of Health Sciences. Bangalore. He has been awarded Ph.D. in Pharmaceutical Sciences from Rajiv Gandhi University of Health Sciences, Bengaluru under AICTE sponsored quality improvement program and also Diploma in Clinical Research from Catalyst Clinical Services Ltd, New Delhi. Dr. Pramod has put-up Twenty-Two years of teaching and research experience in UG, PG and guided 10 scholars for their Ph. D programs under KLE University. He has published and presented research papers in national and international journals/conferences and authored a book in Elsevier publishers, CBS publishers and book chapter in Studium Press, USA. He also been invited as speaker for international conferences at Malaysia, South Africa, Dubai, Brunei, Singapore, Thailand, Srilanka, Nepal, Egypt, Saudi Arabia, Bangladesh and Japan

He has been awarded Best of the Batch Award from Zydus-Indon Cadila Health Care Ltd, Ahmedabad, Best Paper in International & National Conferences and Best Teacher Award. He is also the Member for various professional bodies APTI, ISP, SFE, KSPC etc. He has also worked as Secretary to organize several workshops/ conferences National and International which was sponsored by ICMR, AICTE, UGC, IPA, etc. and currently EC Member & Coordinator, Society of Pharmacognosy, India and Co-ordinator for society for Ethnopharmacology for Belagavi Chapter.

His areas of research interest are, herbal formulations /excipients, biosurfactants, traditional medicines, ethnomedicinal plants and their screening for various pharmacological activities and jointly collaborated with National Institute of Traditional Medicine, ICMR, Belagavi on tissue culture studies of Medicinal Plants from Western Ghats region.

Holistic Health Care Practices & Approaches by the Traditional Healers from Western Ghats Region of Karnataka

Pramod J. Hurkadale

Professor, KLE College of Pharmacy, KLE Academy of Higher education & Research, JNMC Campus, Nehrunagar, Belagavi -590 010, Karnataka

The traditional healers give the evidence of healthcare approaches of the resident community health which are a basis of knowledge with widespread attention that has been used as a foundation for many allopathic medications in various branch of medicine. The traditional information is rapidly decreasing

due to various factors hence, there is a requirement of documenting the knowledge in addition to this stringent quality control of medicinal plant-based medications, along with disparity among the species or alternatives need to be addressed for their quality assertion of the ethnomedicinal plants. The occurrence of rich ethno-medico botanical information in this region appears to be at cross roads with the threat of extinction and decreasing interest towards traditional medicine amongst the new generation has to be addressed and as well as deforestation emerges for the cause of exhaustion of these ethnomedicinal plants. The ethnomedicinal preparations are used by more than 65 % of the population and there has been resurgence in scientific assessment of medicinal plants with their therapeutic activity and newer techniques have been developed for such exploration. The ayurvedic pharmacoepidemiology, reverse pharmacology and observational therapeutics paths have led to significant leads and drug candidates for several diseases.

Dr. Sanjay Sharma, Evolving Regulations for Ayurvedic plant based Wellness Products, Lead- Regulatory Affairs, Hindustan Unilever Limited. Dr. Sanjay Sharma, is MD Ayurveda in Dravyaguna Vigyan. For over two decades, he has been working in the organisations offering evidence based products in the field of nutrition and wellness. He possesses experience of handling research and development functions in the field of Ayurvedic drugs like formulation designing, development and scientific evaluation of their safety and efficacy. He has two poly-herbal formulations for the treatment of Rheumatoid Arthritis and obesity associated Hyperlipidaemia, to his credit. He has been part of the organisations like Dabur India Ltd., GlaxoSmithKline Consumer Healthcare Ltd., in the past, and is currently working with Hindustan Unilever Limited. Besides many publications on regulatory affairs, he has authored a chapter on International Regulatory Scenario of Herbal products, in a book published by 'CRC Press', Taylor & Francis group, titled - 'The modern Ayurveda - Milestones beyond the classical age'. For over a decade now, he has been handling Regulatory Affairs of Ayurvedic medicines, health supplements, foods, personal care and nutrition products for regulated markets like India, North America, European Union, Canada etc.

Ayush Regulations and Ayurveda Aahar

Sanjay Sharma

Hindustan Unilever Limited

While India has always been known for its rich heritage of the traditional systems of medicine; in the last decade there has been a wider acceptance of plant products in the field of nutrition and wellness and modern medical science. The Indian drug regulatory authority, created a new category for the plant-based medicines called Phytopharmaceuticals which has paved way for the pharma industry to develop research backed plant based drugs. Similarly, the food regulatory authority has included a list of approximately 300 plants and other nutraceuticals which could be offered to consumers as supplements or nutraceuticals in the wellness segment. Recently Food Safety Authority of India have notified regulations for Ayurveda Aahar thereby opening newer avenues for the food manufacturers.

With the evolving scenario within the country and wider acceptance of herbal products across the globe, these emerging segments of regulated products have opened more business opportunities for organisations intending to place their products in the international markets.

The international trade of such foods, supplements and wellness products would further help strengthen the acceptance of evidence based traditional medicines and would pave way for exploring the potential of herbs for offering solutions for medicinal use. The presentation provides an overview of the regulations around the Ayurvedic plant based products regulated under the food laws, by Food Safety and Standards Authority of India.

Prof. PK Prajapati, Professor & Head, Dept. of Rasashastra & Bhaishajya Kalpana, All India Institute of Ayurveda (AIIA), Sarita Vihar, New Delhi and Director I/C ,PCIMH , Gaziabad , UP.

Former: Managing Director, I/C IMPCL, Director I/c, All India Institute of Ayurgveda, New Delhi, Dean, All India Institute of Ayurgveda, New Delhi, Director of Institute for Post Graduate Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar NACC "A" grade, I/C Director Pharmacy, Gujarat Ayurved University, Jamnagar 361 008 till 31.03.2015

Having 26 years of experience in teaching PG/PhD at top most institutes of Ayurveda i.e. IMS, Banaras Hindu University, Varanasi; (3.5 yrs.) National Institute of Ayurveda, Jaipur (5.2 yrs.) and IPGT & RA, Jamnagar (13.3 yrs.), AIIA, New Delhi;(3.5yrs,)

Awards

- **Nagarjuna silver medal** 1994 – 96 for the best MD thesis from BHU, Varanasi.
- **Best paper** for publication in **'Indian Drugs**" in phytochemistry and natural products.
- **Teacher's Excellence Award** for Number of Research papers published by CEE.
- **Rasaacharya Award** by Sri BaidyanathAyurved Bhavan, Nagpur
- **IASTAM RasavaidyaNagindas Shah Award – 2017** for the subject of Rasashastra.'
- Honoured as **"Pranacharya" by Indraprasthiya Vaidya Sabha – 2017, Dhanwantari Bhawan, New Delhi**
- Honoured with **Devashram Dhanwantari Bharat Gaurav Award, 2017 at Varanasi**

Pharmaceutical:

More than 26 years of experience in handling commercial and laboratory level of manufacturing in different Ayurvedic dosage forms.

Administrative

Director I/C PCIMH since January 2021

- Managing Director I/c, IMPCL Mohan, Almora
- Director I/c AIIA New Delhi
- Director, IPGT & RA, Gujarat Ayurveda University, Jamnagar (1.6 yrs.)
- Dean, All India Institute of Ayurveda, New Delhi (2016-2018)
- Served as Manager of the Pharmacy, NIA, Jaipur for 01 years

***Topic: Shodhana* in Ayurvedic pharmaceutics w.s.r to Detoxification**

Dr. Ranjan Mitra currently heads the Analytical Department at Dabur Research & Development Centre, Dabur India Limited. His active research interests include development of novel analytical methods for the sensitive detection of bioactive molecules in food, cosmetics and ayurvedic/herbal formulations using hyphenated analytical techniques for claim substantiation. At Dabur his responsibilities include leading a team of scientists (chemists and microbiologists) to develop novel chemical and microbiological methodologies to support the deliverance of more products of value across a diverse food, cosmetic and healthcare portfolio. Dr. Mitra holds a Masters degree in Chemistry from Indian Institute of Technology, Delhi, India and a PhD in bio-inorganic/organic chemistry from University of Florida, USA. After completion of his PhD degree, he did a postdoctoral stint at University of Florida, USA before joining GlaxoSmithKline Consumer Healthcare, India where he held multiple technical and managerial roles for over 8.5 years, working on various analytical research and development programs in nutrition category.

Dr. Mitra is currently the Immediate Past President of India Section of AOAC INTERNATIONAL and played a crucial role of delivering quality programs to meet the professional advancement needs of its members through a variety of offerings, including meetings, and international exchanges. He is the principle member of two Bureau of Indian Standard's Sectional Committees (FAD 26 – Ayurveda and FAD 28 - Test methods for Food Products) and also part of the United States Pharmacopeia's Herbal Medicines Compendium – South Asia Expert Panel.

Overview on the analytical tools for quality control of natural product-based supplements

Ranjan Mitra

Head – Analytical Department, Dabur India Limited
Immediate Past President – India Section of AOAC INTERNATIONAL

The quality of pharmaceutical products is important for ensuring consumer safety and efficacy. Many pharmaceutical products sold today are in various formulations such as powder, capsules, tablets, soft-gels, liquid extracts, and tea. This renders the constituents less identifiable by smell, taste, or physical appearance. Furthermore, as herbal ingredients are expensive, adulteration with other cheaper products occurs. Hence quality assurance of these ingredients is needed. In this talk the speaker will discuss the major techniques such as high-performance liquid, gas, thin-layer chromatographies, infrared and nuclear magnetic resonance spectroscopies, and other molecular methods for ascertaining the primary active ingredients of some of these formulations.

Dr. Sanjay Jachak, M.Pharm. Pune University and Ph.D. from Institute of Pharmaceutical Sciences, Karl Franzens University, Graz, Austria. 22 years teaching experience. Discovery of anti-inflammatory natural products empolying COX-2, microsomal Prostaglandin E Synthase-1 (mPGES-1), cytokines (TNF-α, IL-1α, IL-1β and IL-6) as targets. Discovery of natural product inhibitors of bacterial efflux pumps. Discovery of anti-diabetic and anti-obesity natural products, Medicinal Chemistry and synthesis of natural products, Standardization of herbal drugs and formulations, Phytochemical analysis, and Nutraceutical/Functional Food Development. Application of Novel Drug Delivery systems (Phytosomes, Nanoparticles, SMEDDS etc.) to herbals and herbal bioactives. He published more than 105 research papers in international journal repute. He received **Indian Rs 70 Million** grants from CSIR, Deptt. of AYUSH and DBT, Govt. of India. **Award** PharmInnova, Ahmedabad: Best PhD thesis Award as Research Guide, May 2017, Most cited paper award, Bioorganic Medicinal Chemistry Letters, 2005-2008, Research Fellowship, Austrian Academic Exchange Service, Vienna, Austria from 1995-1998. Ph.D.s **Ph.D**.: **12, Master students**: **80**

Indian Medicinal Plants as a Source of Anti-inflammatory Agents

Sanjay M. Jachak

Department of Natural Products, NIPER-SAS Nagar (Mohali), 160062 Punjab
sanjayjachak@niper.ac.in

Dr Rajiv Kumar Rai, Head - Healthcare Research, Dabur India Limited; MD(Ay), Ph.D (BHU); 27 years of research experience involved actively with PCIM&H and CCRAS for research and quality control of Ayurvedic medicine and have more than 30 publications.

Shodhana and It's *Pharmaceutical Relevance"

Dr Rajiv Kumar Rai

Head - Healthcare Research, Dabur India Limited

Dr. Sathiyanarayanan L. is Vice Principal and Associate professor in Pharmaceutical Chemistry, at Bharati Vidyapeeth Deemed to be University, Poona College of Pharmacy, Pune, Maharashtra, India. He graduated from The Tamilnadu Dr MGR Medical University Chennai, Tamilnadu, and completed PhD from Bharati Vidyapeeth Deemed University, Pune, India. He has published over 85 research papers in peer reviewed international journals and national journals, presented around 80 papers in various conferences and delivered around 75 invited lectures in various programmes including international conferences. His area of research interest is natural product research including herb-drug interaction studies and exploring role of natural products in neuroprotection. He is the recipient of major research projects from UGC, DST, National Medicinal Plant Board-Department of Ayush and AICTE in addition to AICTE ED Cell grant, seminar grant, UGC travel grant, AICTE travel grant and various Industrial research projects; He also received several awards including AICTE young teacher award, BVDU-best researcher award, IASTAM Baithynath award, SFE special recognition award etc. His international visits include Switzerland, UK, Germany, Greece, Australia and Bangladesh. He is the Chairman Board of Studies, BVDU, life member of APTI, IPA, IASTAM India, Treasurer of IPA Pune and co ordinator of SFE India Pune chapter.

Research potential of Herb -drug Interaction

Sathiyanarayanan L.

Vice Principal and Associate Professor in Pharmaceutical Chemistry, Bharati Vidyapeeth, Poona College of Pharmacy, Pune, Maharashtra, India

Herb-drug interaction is one of the major research areas that needs to be given more attention. In drug discovery natural sources play an important role. Many of the lead molecules have been obtained from plant sources. Such molecules not only act as lead but also they are used in the form of extracts. Being active constituents, they exhibit pharmacological activities either as a sole compound or they exhibit synergistic or additive activities with other components. Hence as a whole extract there are challenges in standardisation. However there are many such polyherbal formulations exist in the market for the treatment of many ailments. They are consumed by number of patients along with prescribed medicines. This fact is not even disclosed to many healthcare practitioners. Plant extracts and some of their constituents may interact with various prescription drugs when consumed at a time pharmacokinetically and pharmacodynamically thus raise a serious question about the pharmacological efficacy. The interaction may lead to beneficial or harmful effect which needs to be studied. Many such studies have been reported, however still there is need for extensive research in this area. The complexity of herbal remedies, difficulty in developing analytical methodology, identification of causative constituents

and the dissimilarity of CYP enzymes in laboratory animals and humans are the major challenges of this area of research. We have reported an important anti-inflammatory herb *Andrographis Paniculata* Nees extract with some anti-inflammatory drugs including etoricoxib, nabumetone and naproxen in which the extract and andrograholide were found to exhibit interaction with these drugs. In similar line further investigations is also ongoing. This presentation highlights the perspectives, challenges and approaches of Herb drug interaction studies with some results of recent studies.

Professor Inder Pal Singh 1994-1998 Ph.D. Natural Products Chemistry, Shizuoka University, Japan, 1989-1992 Ph.D. Organic Chemistry, Punjab Agricultural University, Ludhiana, India Academic Fellowships. Aug 2000 –March 2002 JSPS Post Doc Fellowship, Institute of Chemical Research, Kyoto University, Japan June 1998- May 2000 Post Doctoral Fellow, Prof. W. H. Gerwick, College of Pharmacy, Oregon State University, Corvallis, OR 97331, USA 1994-1998 Monbusho Fellowship, Ministry of Education, Japan 1992-1994 Senior Research Fellowship, CSIR, New Delhi, India 1989-1992 Merit Fellowship, Punjab Agricultural University, Ludhiana, India 1981-1982 Merit Scholarship, Govt. of India. Isolation of bioactive molecules from natural sources. Standardization of herbal/Ayurvedic formulations. Biomimetic synthesis of bioactive natural products for therapeutic areas such as HIV and leishmaniasis.

Quantitative NMR: Analysis of Essential oils

Inder Pal Singh

Department of Natural Products, National Institute of Pharmaceutical Education and Research (NIPER), Sector 67, S. A. S. Nagar, Punjab-160062, India

Corresponding author: 919815026410, ipsingh@niper.ac.in

Gas Chromatography and Gas Chromatography-Mass Spectrometry are the methods of choice for analysis of chemical composition of essential oils. NMR has been rarely used for this purpose. Analysis of secondary metabolites in Essential oils using qNMR. Essential oil of *Eucalyptus tereticornis* was prepared using Clevenger's apparatus. The essential oil of *Eucalyptus tereticornis* showed the presence three major monoterpenes. Essential oil of *Eucalyptus tereticornis* showed presence of α-pinene, ß-pinene and 1,8-cineole as major components. These three compounds as well as other major compounds were identified and quantified using qNMR. The method was validated with respect to selectivity, precision, accuracy, and robustness. The results were compared with literature and also by GC-MS analysis.

Prof. Anil Kumar Sharma is vast experienced pharmaceutical professional with Ph.D. in Pharmaceutical Sciences & dual management qualification, expertise in ayurvedic product development, researches, regulatory affairs, documentations, brand promotions, quality assurance, academics and in other affairs for Pharmaceutical Industry. He has been into academics as Principal/ Director in AICTE & PCI approved post graduate pharmacy institutes at Vadodara & Jalandhar for about 7 years. Dr. Sharma is associated with AIMIL Pharmaceuticals India Limited for about 25 years and presently functioning as Vice President for the company. He has been into development of several herbal base formulations for the company, which have risen as the segment leader in the market. Dr. Sharma has travelled to about 14 countries including USA & Canada for the technical support in business development for the company. Prior to AIMIL, Dr. Sharma has worked for Cadila, Ranbaxy, Dee Pharma, Dallah (KSA) and have about 51 publications to his credit in journals of repute.

Concept of multi-targeted therapeutics approach in Ayurvedic health system

Anil Kumar Sharma

Vice President, AIMIL Pharmaceuticals (India) Limited, A-13/2, Naraina Industrial Area, Phase 1, New Delhi - 110028

The word Ayurveda is a conjugation of two Sanskrit words '*Ayur*', meaning 'life' and '*veda*', meaning 'science', thus Ayurveda literally means the 'science of life' and Ayurveda focuses more on healthy life than treatment of diseases. The science of Ayurveda has simplified the organizational layout of the human body into three basic components, Dosa (Body Humours), Dhatu (Tissue) and Mala (Impurities) and altogether they contribute to the pattern of Metabolism. The basic principle of Ayurvedic medicine is to prevent and treat illness—rather than respond to indicators of disease—by maintaining balance in and harmony between your body, mind and environment acting on all relative system of body systemic & synergistic. In a positive and broad manner, Ayurveda defines health as *Swasthya*, which actually means “being contented in ones' natural state of inner harmony.” According to Ayurveda, one is considered as healthy when body, mind, and spirit are in the state of equilibrium, comfort, and bliss. Classical Ayurveda texts cover an array of themes on ingredients ranging from diversity of natural sources, their properties in relation to seasons and places and to their specific function both in physiological and pathological states. The epistemic perspective on health and nutrition in Ayurveda is very different from that of modern medicine and modern nutrition. This concept thereby helps in contributing increase in energy and wellbeing, decrease stress & prevent and cure disease with all safety. Ayurvedic products thereby are selective for safety, effectiveness, and cost-effectiveness to yield health, social, and economic benefits.

Nutraceutical: Bridging the gap between Food & Medicine

Mamta Prajapati

FICSI, Inda

"Let food be your medicine and medicine be your food" a well known saying by Hippocrates who advocated the healing effects of food. Nutraceuticals, Its roots can be traced to Indian system of medicine in the form of chavanprash which is an age-old remedy for restoring & maintaining general health. For ages, people in India, because of their cultural beliefs and experiences have taken herbs and herbal formulations as part of their daily food supplements. Nutraceutical is the hybrid of 'nutrition' and 'pharmaceutical'. Nutraceuticals, in broad, are food or part of food playing a significant role in modifying and maintaining normal physiological function that maintains healthy human beings.

The FSSAI has notified the Food Safety and Standards (Health Supplements, Nutraceuticals, Food for Special Dietary Use, Food for Special Medical Purpose, Functional Food and Novel Food) Regulations, 2016 in the Official Gazette on 23 December 2016. Recently FSSAI had overhauled the above regulation and drafted a new framework to be called Food Safety and Standards (Health Supplements, Nutraceuticals, Food for Special Dietary Use, Food for Special Medical Purpose, Probiotic and Prebiotic) Regulations, 2022 to bring more clarity into the new category of food.

Need of Nutraceuticals:

The quality of life in terms of income, spending & lifestyle has improved with economic development. However, it has also thrown up a major challenge in the form of "lifestyle diseases". The first victim of this lifestyle change has been food habits. In recent years, a new diet health paradigm is evolving which places more emphasis on the positive aspects of diet. The new lifestyle adopted by people today has changed the basic food habits, less physical work, more of desk jobs have made people vulnerable to lifestyle arrangements. Consumption of the junk food has increased manifold leading to a number of diseases caused due to improper nutrition. Obesity is now recognized as a global issue. Heart disease continues to be a primary cause of death followed by cancer, osteoporosis, arthritis and many others. Consumers being frustrated with the expensive, high-tech, disease-treatment approach in the modern medicines are seeking complementary or alternative beneficial products. Stressful lifestyles, hectic schedules & lack of time to cook meals at home among increasing number of working class males & females is resulting in demand for external dietary supplements. Nutraceuticals can play an important role in controlling them. No wonder more & more people are turning to nutraceuticals.

Indian Nutraceutical Market:

Global need for nutraceutical is vast and is growing day by day. Indian nutraceutical market is expanding especially during the COVID pandemic. The entire category of Nutraceuticals is divided into Functional Foods, Functional Beverages & Dietary Supplements. Functional Foods include food products such as functional cereals, vegetable oils, nutrition bars, biscuits, breads, yogurt & others. Functional Beverages include various drinks like fruit juices, milk, tea, coffees, & energy drinks with added functional ingredient. The dietary supplement market covers vitamins & minerals, herbal supplements, protein supplements & chavanprash. The benefit associated with this category of food lies in the fact targeting specific needs of different consumer segments - growing children, pregnant & lactating mothers, youths with specific requirements or needs due to specific lifestyle and the elderly population vulnerable to different age related diseases.

Dr. Ghazala Javed is working as Research Officer (Unani)-Scientist-IV in Hqs of Central Council for Research in Unani Medicine (CCRUM), M/o Ayush, GoI, where she is involved in planning, implementation, coordination & monitoring of research & development and other related activities. During her 25 years job tenure, she has participated in many professional meetings and conferences and made a niche for herself as an expert from CCRUM and Ministry of AYUSH, Govt. of India. An alumna of Jamia Hamdard she has an excellent academic record with a gold medal to her credit. She holds a PG Diploma in IPR and WHO fellowship in managing Public Health Programs. She is a trained bioethicist and has done a long term training program in bioethics jointly conducted by ICMR-NIH, USA.

During her tenure of eight years in the Ministry of Ayush, Govt. of India, she looked after the work related to International Cooperation and actively contributed to the globalization of Ayush systems. Amongst other areas, she dealt explicitly with work related to the Americas Division, U.N. bodies like WHO, WIPO, UNESCO, etc. She has participated as delegate from India several times in the Inter-Governmental Committee meet on Protection of Traditional Knowledge, Traditional Cultural Expressions and Folklore in World Intellectual Property Organisation (WIPO), Geneva and also took part as an International delegate in a Seminar on Intellectual Property and Traditional Knowledge held at WIPO and talked about "Protection of Traditional Knowledge –Initiatives from India". She was also involved in developing National Position Paper on Protection of Traditional Health Knowledge by closely working with the team from JNU. She has also served as an advisory member for the Forum for Indian Traditional medicine (FITM) set up by the M/o Ayush at Research and Information System for Developing countries (RIS).

She was deputed as a visiting scholar in Unani stream to National Centre for Natural Products Research, the University of Mississippi, Oxford, USA, for 03 months to get exposure and hands-on training in Natural Products Research where she had active interactions with team USFDA. Also worked as a consultant from M/o Ayush for assisting the Indian Institute of Foreign Trade (IIFT) to conduct a Study on Export Potential for Ayush products in SAARC and ASEAN countries.

She has the honour of featuring as "The Face of Unani" in the book "India's most Powerful Women" written by Ms. Ahluwalia where she features along with eminent personalities like Najma Heptullah, Sushma Swaraj, Kiran Bedi, Mohini Giri, Maneka Gandhi, amongst many other eminent personalities. The book was released by Secretary General of United Nations, WTO, in Berlin, Germany was also presented to the then Hon'ble President of India Shri Pranab Mukherjee at Rashtrapati Bhawan where she was present as a special invitee.

She was a special invitee to interact with President Obama and Michelle Obama during their visit to India in Jan 2015. She has been conferred Make in India award for "Brilliant contribution in the field of Unani Medicine" by Hon'ble Minister, Shri Ashwini Choubey; "NCR DELHI RATAN" award for the recognition of the distinguished services rendered by her to the society at large in the 40th Annual Celebration Year 2019, All India Conference of Intellectuals. She has also been conferred Dr Abdul Razzack award by All India Unani Tibbi Congress and NGO, dedicated to promoting Unani Medicine.
She has also been awarded one of the most prestigious Dr. Sarojini Naidu, International award for working women which was presented to 100 most important women from fifteen countries of the World by Asian Academy of Arts, a three decades old organization in association with the International Chamber of Media Industry during 6th Global Literary Festival 2020.

Integration of Unani medicine in healthcare delivery system

Ghazala Javed[1], Asim Ali Khan[2]

[1]RO(U)-Scientist-IV, CCRUM Hqs and Incharge, DSRU, New Delhi
[2]Director General, CCRUM, New Delhi

World Health Organization's Traditional Medicine Strategy for 2014-2023 lays emphasis on achieving the goal of Universal Health Coverage by integrating Traditional & Complementary Medicine services into health care service delivery and self-health care. "Beijing Declaration" adopted on the occasion of first WHO Congress on Traditional medicine in 2008 also stressed on promoting the safe and effective use of traditional medicine. This declaration calls on Member States and other stakeholders to take steps to integrate traditional medicine (TM) / complementary and alternative medicine (CAM) into national healthcare systems.

Mainstreaming of Ayush systems in public health care is one of the key strategies of Government of India to provide healthcare to masses for which ample policy support is provided. Integration of these systems including Unani medicine in mainstream healthcare will further assist in achieving Universal Health Coverage.

For the overall development of Unani Medicine along with other Ayush systems, the Government of India has been providing increasing funds and support. As a result, Unani medicine today forms an integral part of national healthcare delivery system

The current status of products, practice and practitioners of Unani medicine in India and its scope for further development will be discussed.

Insight of *Shodhana* (detoxification or purification process) poisonous drugs in Ayurveda: A scientific appraisal

Bidhan Mahajon[1*], Shruti Khanduri[2], N. Srikanth[3]

[1,2]Research Officer (Ayurveda), [3]Deputy Director General, Central Council for Research in Ayurvedic Sciences, Ministry of AYUSH, Janakpuri, New Delhi-110058
***Corresponding author**: drbidhanccras@gmail.com

The detoxification or purification process of any toxic raw materials before use for humankind is termed "*Shodhana*". In Ayurveda, *Shodhana* has been in practice since the times of *Caraka Samhita* (2nd Century BC). However, its use expanded with the development of *Rasashastra* (8th Century CE) for safely dealing with metals and mineral-based formulations. The *Shodhana* process is exclusively designed for poisonous/toxic drugs of plant or mineral origin. However, the classics have recommended different *Shodhana* methods with particular media for all kind of drugs to eliminate their impurities or harmful content. Present paper is intended to extensively discuss and comprehend the scientific basis of the purification process of various toxic plants for their safe and rationale use. Commonly used poisonous plant materials with their purification process and underlying mechanism have been analyzed based on published literature. Several toxicological and pharmacological studies have investigated the active phytochemicals of many poisonous plant materials before and after their *Shodhana* process. Studies have shown that the toxic constituents of the respective toxic raw materials are transferred into media used for the purification process, rendering the drug nontoxic. Specific media recommended for *Shodhana* is vital in making a drug active without causing adverse effects. The ancient concept of *Shodhana* covers the purification/detoxification of the poisonous drugs along with their physical and chemical impurities, minimization of adverse effect and improving the potency/therapeutic efficacy of the purified plant materials. *Shodhana* is the process which involves the conversion of any poisonous drug into favourable, nonpoisonous/nontoxic ones. It involves the purification and reduction in the levels of toxic constituents, which sometimes results in an enhanced therapeutic worth.

Prof. (Dr.) Tanweer Alam is presently working at Indian Institute of Packaging under the Ministry of Commerce & Industry, Govt. of India, He is Alumnus of ICAR_ NDRI Karnal and University of Allahabad. His research domain is Food Packaging, Package design, sustainable Packaging, UN Certification. He has visited the University of Copenhagen, Denmark under faculty exchange programme funded by European Union (EU) under East West Food Project. Participated in INTERPACK, Dusseldorf, Germany & Jury member for AsiaStar Award, WorldStar Awards 2020. Board Member of World Packaging Organisation (WPO) & Asia Packaging Federation (APF). Organized several conferences/workshops of national/international stature for promoting packaging industry have been organized under his guidance in different capacities. Convener of International Summit for Packaging Industry (ISPI) and world Packaging Congress (WPC). Published more than 100 research and technical papers in high impact referred journals, apart from delivering several invited lectures both in India and abroad. Authored five books on packaging and also edited dozens of proceedings and technical souvenir. Editor in Chief of Journal of Packaging Technology and Research, also associated with editorial board of processed food industry and national fellow of Academy of Dairy Science. Life member of different scientific and academic journals. Member of different committees of BIS & FSSAI focusing on packaging regulations. Recently received Mumbai Achievers Awards 2020 and 2021.

Packaging Prospective of Ayurvedic and Functional Foods

Tanweer Alam

The food industry is continuously evolving through the application of innovative tools and ingredients towards more effective, safe, natural and eco-friendly solutions to satisfy the demands of the costumers. In this context, natural sources (i.e., leaves, seeds, peels or unused pulp) can entail a valuable source of compounds, such as essential oils, with recognized antioxidant and antimicrobial properties that can be used as natural additives in packaging applications. Functional foods ensures superior nutritional quality; contain biologically active compounds in defined amounts. The concept of nutraceuticals and functional foods can be traced to the ancient Ayurvedic system of health care. The classical texts of Ayurveda are filled with scattered references of implication of food products in various disease conditions. Ayurvedic system advises a wide range of food preparations that can be consumed daily for improving quality of life by offering protection from external and internal stressors.

These foods have to be effectively packaged and stored in order to prevent microbial spoilage and risk of food borne infections. Recently, food technologists and scientists are formulating the Essential Oil (EOs) containing functional foods. The antibacterial, antifungal, antioxidant and anti-carcinogenic properties of EOs have been proved by a number of researchers. Health conscious consumers prefer natural additives, hence these volatile oils due to their green image can be safely used as a replacement of synthetic preservatives. The shelf life of functional foods can be improved by antimicrobial packaging incorporating EOs and their derivatives in the edible films and coatings. EOs can be easily fabricated as microcapsules and nanoparticles, which increases their stability and solubility. Hence EOs are considered as the most usable additives in future functional foods

Packaging is essential for protecting food products from the environment and is intended to ensure food safety at the same time that industrial and consumer requirements are satisfied. Researchers have investigated new advances on packaging systems, leading to the development of active packaging. This is one of the most promising fields in the packaging sector, which aims to prolong shelf life, ensure food quality and safety and improve product appearance. Active packaging materials are characterized by incorporating components with biological properties that are slowly released into the functional food, Ayurveda and Unani products. The current trend is the incorporation of active kinds of biodegradable materials, such as edible films, thus developing active packaging systems with improved preservation properties that can offer benefits to both the food and packaging industry by reducing food waste and improving the management of packaging waste.

- **Short Lectures**
- **HAH Award Lectures**
- **Oral Presentations**

JH/IASTAM2022/SL01

Comparative evaluation of the anti-thrombocytopenic activity of bioactivity guided fractions of *Momordica charantia* and *Psidium guajava*

Adil Ahmad*, Sayeed Ahmad, S.H. Ansari

Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India
***Corresponding author:** adilyaqoob08@gmail.com

Momordica Charantia L. and Psidium guajava L. are the two known traditional medicine used for long as an analgesic, anti-inflammatory, antimicrobial, hepatoprotective and antioxidant. The hydroalcoholic extract of dried mashed Guava leaves and fruits of *Momordica charantia* were prepared using 80% ethanol through soxhlation. The extract was dried and subjected to polarity-based fractionation using hexane, DCM, and *n*-butanol. The platelet enhancing activity of these fractions has been compared by checking platelet count in Wistar rats. The phytochemical profile of the best bioactive fraction was carried out by HPTLC. Total ash and acid-insoluble ashes were 6.2% and 0.003%, respectively. A total of 38.5%w/w hydroalcoholic extract as mother extract of *Psidium guajava* L. was yielded. Successive polarity-based fractionations of *Psidium guajava* L. with hexane, DCM, n-Butanol, and water yielded 7.31, 7.31, 36.59, and 45.74%, respectively, and a total of 27.0%w/w hydroalcoholic extract as mother extract of *Momordica Charantia* L. was yielded. *Momordica Charantia* L. with hexane, DCM, n-Butanol, and water yielded 6.66, 6.66, 13.33, and 66.66%, respectively. In Wistar rats, maximum antithrombocytopenic activity was observed in the aqueous fraction, followed by the *n*-butanol fraction and mother extract. In Wistar rats, platelet count was enhanced up to 166% by an aqueous fraction, followed by a mother extract (14.83%) and an *n*-butanol fraction (8.57%). Nine metabolites in aqueous fraction were separated by HPTLC and compounds at R_f 0.1 and 0.3 were the major contributing metabolites. The developed HPTLC methods can be used for quantitative and qualitative analysis of bioactive fractions of *Psidium guajava* L. and *Momordica Charantia* L. it can be used as an antithrombocytopenic drug.

JH/IASTAM2022/SL02

Antiglycating potential of *Spirulina platensis*, a cyanobacterium

Additiya Paramanya, **Ahmad Ali***

Department of Life Sciences, University of Mumbai, Vidyanagari, Mumbai 400098
***Corresponding author:** ahmadali@mu.ac.in

Spirulina, a cyanobacterium, is a well-known organism for its nutritional and therapeutic potentials. Studies have shown the health promoting role of Spirulina extract and its constituents. However, there are very few reports in literature regarding the potential application of glycation and its downstream processes like aggregation and glycoxidative damage to biomolecules. The main objective of this study was to assess the role of Spirulina extract in the prevention of glycation and aggregation. Three sugars, glucose, fructose and ribose were incubated with haemoglobin for four weeks at 37°C. These samples were analysed for the amount of glycated products and effect of extract in the suppression of these products. Aqueous extract of Spirulina was found to be more effective in preventing glucose-induced than ribose and fructose-induced glycation. Similarly, glucose-induced glycation-mediated aggregation was also severely suppressed in the presence of aqueous extract. The formation of individual fluorescent advanced glycation end products was also found to be inhibited by the aqueous extract. Analysis of agarose gel electrophoresis of the glycated DNA revealed that extract could strongly prevent the nicking of the DNA. Antioxidant potential of the organism was measured and a relationship was established between this and antiglycation property of the extract. It can be concluded that the Spirulina extract has significant potential in preventing the glycation induced damage of biomolecules and their secondary structure alteration. This study can be applied to therapeutic potential of treatment of Diabetes and its secondary complications.

JH/IASTAM2022/SL03

Traditional Indian herbal medicines in bone regeneration and osteoporosis

Bushra Parveen

JH/IASTAM2022/SL04

Identification of the Botanical Source and TLC/HPTLC Pattern of *Ficus hispida* leaf

Harjeet Singh, Akanksha Thakur

Ficus hispida Linn. is a coarsely hairy shrub or moderate sized tree found throughout the year and is grown wild or cultivated for its edible fruits, leaves and bark etc. Traditionally, different parts of the plant have been used in the treatment of ulcers, psoriasis, anemia, piles jaundice, vitiligo, hemorrhage, diabetes, convulsion, hepatitis, dysentery, biliousness, and as lactagogue and purgative in Ayurveda. The plant contains wide varieties of bioactives from different phytochemical groups like alkaloids, carbohydrates, proteins and amino acids, sterols, phenols, flavonoids, gums and mucilage, glycosides, saponins, and terpenes. The present investigation involves the macroscopy, microscopy, physicochemical evaluation and HPTLC studies of *Ficus hispida* leaf. Till now, no work has been published to elaborate the pharmacognostic features of FH Linn. The present study is, therefore, an effort to give a detailed account on its pharmacognosy and phytochemistry. These observations will help in proper authentication and standardization of the drug and also to check adulteration in the raw drug.

JH/IASTAM2022/SL05

The plant flavone, apigenin in liver cancer prevention and chemosensitization for sorafenib

Hifzur R Siddique*, Deepti Singh

Molecular Cancer Genetics & Translational Research Lab, Section of Genetics, Department of Zoology, Aligarh Muslim University, Aligarh-202002, India
***Corresponding author:** hifzur.zo@amu.ac.in

Liver cancer is the sixth most commonly diagnosed cancer and the third leading cause of cancer death worldwide. Sorafenib is an FDA-approved oral multi-kinase inhibitor- used to treat liver cancer with limitations such as associated toxicity and drug resistance. Apigenin, 4',5',7'-trihyroxyflavone is a naturally occurring flavonoid having several medicinal properties such as anti-inflammatory, antioxidant, and anticancer properties. We aimed to investigate the anticancer effects of Apigenin in *in-vivo* studies via a meta-analysis. Next, we aimed to examine the antitumor efficacy of the combined treatment of Apigenin and Sorafenib in inhibiting DEN-induced HCC in Swiss albino mice. In addition, we also explored the adverse effects of Sorafenib and its possible amelioration by Apigenin. For the meta-analysis study, several electronic databases were searched to fetch the relevant articles, and the anticancer effects of Apigenin were systematically analyzed. Next, assess the antitumor efficacy of the combined treatment of Apigenin and Sorafenib in inhibiting DEN-induced liver cancer. We performed cell viability assays, SEM, liver function tests, histopathological and immunohistochemical studies. To assess Sorafenib-induced toxicity and possible amelioration by Apigenin, we performed DNA interaction studies, genotoxicity tests, analyzed multiple stress parameters, etc. Our study confirmed that i) Apigenin reduced tumor volume, weight, tumor number, and tumor load. Apigenin exerted antitumor effects mainly by inducing apoptosis/cell-cycle arrest ii) enhanced efficacy of combination treatment in reducing the frequency of DEN-induced liver cancer as compared to both Apigenin and Sorafenib alone iii) reduction in the Sorafenib-induced toxic effects (genotoxic, oxidative and gross damage) indicated by a decrease in the frequency of DNA damage, free radical generation, oxidative and tissue/organ damage. In conclusion, the combination treatment of Apigenin and Sorafenib could be used as a potential approach for enhancing Sorafenib's anticancer therapeutic efficacy and reducing the Sorafenib-induced toxic effects.

JH/IASTAM2022/SL06

Boswellia serrata in cancer scope for therapeutics

Mohammad Ahmed Khan

JH/IASTAM2022/SL07

Evaluation of antiproliferative, antiobesity and wound healing activity of traditionally used medicinal plants of Manipur and cyanobacteria

Kshetrimayum Vimi[1,3], Devika Chanu[1,3], Heisnam Rameshwari[1,3] Soibam Thoithoisana Devi[1,2] **Nanaocha Sharma**[1]

[1]Institute of Bio-resources and Sustainable Development (IBSD), Takyelpat, Imphal- 795001, Manipur, India

[2]Department of Zoology, Manipur University (MU), Imphal- 795003, Manipur, India

[3]School of Biotechnology, Kalinga Institute of Industrial Technology (KIIT), Deemed to be University, Bhubaneswar- 751024, Odisha, India

Medicinal plants have been used as a source of medicine since prehistoric times. The information about their healing properties has been transmitted over the centuries. Our current major objective is to validate the use of some selected traditionally important medicinal plants and cyanobacteria from Manipur for their therapeutic importance with reference to cancer and obesity. The traditionally used medicinal plants were evaluated for its activity in combination with the conventional chemotherapy drugs to enhance its potential in treating cancer. A total of 6 (six) medicinal plants including, *Paris polyphylla, Ageratina adenophora*, *Ocimum basilicum, Zanthoxylum rhetsa*, *Zanthoxylum armatum*, *Litsea cubeba* were studied for their cytotoxic activity against different cancer cell line, HCT-116, A549, HeLa, MCF, SCC9 etc. Plant extracts of *Paris polyphylla* and *Litsea cubeba* were found to induce apoptosis in HCT-116 and SCC9 cancer cells respectively. Purified phycocyanin from *Westiellopsis* sp.(a fresh water algae) was also found to possess cytotoxicity activity against MDA-231 and induced apoptosis through caspase 3 activation. Further, anti- obesity studies of *Garcinia xanthochymus* extract in 3T3-L1 adipocyte cells have also demonstrated the hypolipidemic effect of the plant. Moreover, studies on wound healing activity of *Ageratina adenophora* have shown high wound healing activity and we have been lucky enough to prepare a wound healing lotion using *Ageratina adenophora* extract.

JH/IASTAM2022/SL08

Ayurveda Panchakarma: A Multidimensional Therapy

Narayan Jadhav[1*], Shital Ghorband[2]

[1]Member, Board of Ethics and Registration, NCISM, Min.of AYUSH, New Delhi (India)

[2]Ayurved Consultant, Sushrut Ayurvd Hospital and Research Center, Udgir, Dist. Latur (MH), India.
***Corresponding author**: drnarayanj52@gmail.com, 8329881473

Ayurveda is a highly systematized medical system resting on proven theories and thousands of years of documented clinical observations with unbroken and successfully continuing clinical practices. The *Ayurvedic* approach to prevention and cure of disease swings around the four broad principles i.e. *Nidan Parivarjan* (elimination of cause of disease) , *Samshaman* (Palliative Medicine), *Shamshodhan* (Panchakarma) *Pathyapthya* (specific diet and life style modifications) *Panchakarma* Therapy is an unique and a complete holistic approach, to the elimination of the root cause of every disease, Panchakarma or Bio-purification is defined as The curative detoxification which aim to purify the body from organ to cellular level and to clear various channels of the body. These are *Vamana, Virechana, Vasti (Anuvasana & Asthapana), NasyaKarma* & *Raktamokshana.* These therapies detoxify, strengthen tissues & enhance cell's inner intelligence to facilitate self-healing to help, eliminate diseases & promote longevity. It is also claimed that a disease cured by *Shamshodhan* never relapse or re-occur, as this therapy eradicates the very root cause of disease. *Panchakarma* therapies are widely practiced across the India & also getting Global attention, so there is urgent need to standardize the procedure with respect to its safety and efficacy. With this intent the attempt is made to assess the multifaceted role of different *panchakarma* therapies in various conditions. These therapies are found applicable to all clinical conditions, covering a wide range of health promotive, disease preventive, curative and rehabilitative aspects.

JH/IASTAM2022/SL09

Impact and relevance of standardization of herbal drugs and formulations

Nasir A. Siddiqui

King Saud University, Republic of Saudi Arabia

Corresponding author: nasiratksu@gmail.com

Herbal medicines are one of the major stake holders of complementary and alternative medicines category of health-related products. The high demand of herbal medicines throughout the world is a clear indication of the attitude and beliefs of the people for herbal medicines. Overall quality, safety and efficacy of herbal products emerged as one of the main challenges of this stream. Normally the information given on the label is far away from what is in the container. The problems add on with the misconception of 'safe being natural' although neither every natural herbal product is safe nor it has magical healing power. Unfortunately, most countries do not have regulatory policies that can effectively protect their citizens from the identified problems. For example, herbal products are regulated as dietary supplements in the United States, and are therefore not subject to most of the requirement that proprietary drugs must meet before they can enter the marketplace. Lack of standardization parameters is one of the drawbacks for herbal medicines and also the lack of standardization of raw materials, of processing methods and of the final products, dosage formulation, and the nonexistence of criteria for quality control. It is mandatory to introduce measures on the regulation of herbal medicines to ensure quality, safety and efficacy of herbal medicines by using modern techniques, applying suitable standards and GMP. Despite of challenges, herbal medicines are inexhaustible and have always been a source of drug discovery for traditional as well as modern system of medicines.

JH/IASTAM2022/SL10

Discovery of novel bioactive steroidal saponins from rizhomes of *Trillium govanianum*: An Ayurvedic crud drug

Prasoon Gupta, Basir Lone

Department of Natural Product Chemistry, Indian Institute of Integrative Medicine, Canal Road, Jammu-180001, India

Trillium govanianum commonly known as *nag chhatri* is a high-value medicinal herb belonging to the family Melanthiaceae and is mainly distributed in the altitudinal ranges of 2500–4000 metres above sea level across the Himalayan region. The rhizomes of this plant have traditionally been used in the Ayurvedic system of medicine to treat inflammation, pain, burn, and reproductive malfunctions. However, the ethanopharmacology and chemical constituents of *T. govanianum* have not been effusively explored. To date, only 13 phytoconstituents were isolated and identified from the rhizome and approximately 24 steroidal saponins were tentatively identified using LC-MS. The present study attempted to identify novel bioactive compounds from *T. Govanianum*. In our initial screening ethanol extract of the rhizomes showed potent anticancer activity against colon and breast cancer. Further, bio-activity guided phytochemical investigation led to the isolation of two novel steroidal saponins 1-2, along with 8 known compounds. The structures of the isolated compounds were elucidated on the basis of detailed spectroscopic methods (1D &2D NMR) and HR-MS data. All the isolated compounds were evaluated for their cytotoxicity against a panle of human cancer cell lines (A549, HCT-116, MCF-7, MDA-MB-231, MIA-PACA-2, SW-620 and PC-7). Novel compounds 1-2 showed remarkable cytotoxic effect with IC_{50} values ranges from 0.69-2.56 μM against MIA-PACA-2, A5-49, MDA-MB-231 and SW-620 cell lines.

JH/IASTAM2022/SL11

Combination nanoparticulate formulation of 5-FU and silymarin: A better line of cancer therapy

Rabea Parveen

JH/IASTAM2022/SL12

A case study on cholelithiasis/hissath e marara in Unani medicine

S.G. Vishnu Sathya*

Allama Iqbal Unani Medical College, Muzaffar nagar, Uttar Pradesh
Sathya Unani Health Care, H.No. 2-2-64/15, Turab nagar, Amberpet, Hyderabad, 500013, Telangana
***Corresponding author**: 8008417175, sathya.unani@gmail.com

Cholelithiasis/Hissath e marara is a stone found in gall bladder due to quantitative and qualitative changes in safra/ bile. The objective is to ascertain that Islah e jigar advia and mufattit e hissath advia is the line of treatment in dissolving gall bladder stones. The clinical retrospective study has been done to frame an assertive statement on the principles of Unani treatment/ usool e ilaj in hissath e marara. A case study of a patient aged 20 years presented with a complaint of severe pain in right upper quadrant below the ribs, nausea, vomiting after food intake, bloating and frequent belching. Dietotherapy and pharmacotherapy were chosen to treat the disease through Unani medicine. In dietotherapy, hepatoprotective foods like lettuce (*Lactuca sativa*), celery (*Apium graveolens*), raddish (*Raphanus sativus*) were added in the food. In pharmacotherapy, Hepatoprotective/muqawie jigar drugs like Majune dabeedul ward, arq e kasni, arq e makaoh, arq e biskhapra ; and mufattite hissath / lithotriptic drugs like majune hajrul yahood, majune sange sar mahi. Ultrasonography has been taken as a diagnostic parameter to study the stone in gall bladder. The test has been repeated in every 4 months to study the Cholelithiasis. The clinical study inference of Cholelithiasis is not only resulted in dissolving the gall bladder stone of size 20 mm but also resolved other symptoms like pain, indigestion etc.

JH/IASTAM2022/SL13

Investigating fish oil integrated Tacrolimus nanostructured lipid carrier for improved *in-vivo* prospects

Saba Khan, Sana Khan, Sanjula Baboota, Javed Ali

School of Pharmaceutical Education and Research, Faculty of Pharmacy, Hamdard University, New Delhi-110062

Tacrolimus (TL), is the mainstay of immunosuppressive drug therapy (ISD) but it faces significant hurdles subsequent to its oral administration which is attributed to its poor aqueous solubility, extensive intestinal and hepatic first pass metabolism and extrusion in the intestinal lumen via P-glycoprotein (P-gp) efflux transporters. The present work was aimed to overcome these hurdles and enhance the *in vivo* performance of TL via fish oil integrated lipid based nanocarrier system. The fish oil reportedly has promising characteristic immunomodulatory property which could contribute potentially in improving TL therapeutic prospects. Interestingly, the absorption of TL will be more efficacious from intestinal lymph as T lymphocyte and other cytokines involved in immunogenic cascade reside in lymphatic fluid. In the present study fish oil based nanostructured lipid carrier (F-NLC) of TL were prepared, characterized and investigated for their improved lymphatic accessibility and *in vivo* fate. The results of lymphatic distribution study demonstrated significantly higher lymphatic accessibility of fish oil integrated F-NLC in comparison to N-NLC (without fish oil) and TL suspension (***$p<0.001$) which could lead to promising therapeutic outcome in immunosuppressive drug therapy.

JH/IASTAM2022/SL14

Modulatory effects of *Withania somnifera* on post-traumatic stress disorder induced anxiogenesis, neuroinflammation and brain oxidative stress in rats

Sana Rehman*, Md. Faizan, Nafaa Hasan Ali, Kavita Gulati[1], Arunabha Ray

Departments of Pharmacology, Hamdard Institute of Medical Sciences and Research, Jamia Hamdard, New Delhi

[1]Vallabhbhai Patel Chest Institute, University of Delhi, Delhi

Post-traumatic stress disorder (PTSD) is a complex neuropsychiatric condition and is associated anxiogenesis and cognitive deficits. Several treatment strategies have been suggested to reduce morbidity and mortality, but none of them are consistently effective and safe; and hence there is an unmet need to device appropriate pharmacological approaches for the treatment of PTSD. More recently, the brain-immune axis has been implicated in stress and therapeutic targets have been speculated. *Withania somnifera* (Ws, Ashwagandha) is an effectively used medicinal plant in Indian traditional systems of medicine for various ailments primarily acting as an adaptogen and rejuvenator. In view of this, we evaluated the effects of standardized Ws extract on experimentally induced PTSD in rats and attempted to elucidate the mechanisms involved. Time dependent sensitization (TDS) was used as the experimental model for PTSD, and exposure to TDS resulted in anxiogenic behaviour in the elevated plus maze (EPM) test, i.e. reductions in both no. of entries in the open arm and time spent in the open arms in the EPM, as compared to the non-stressed rats. Pre-treatment with *Ws* extract (100 and 300 mg/kg, p.o. x 14 days) attenuated the TDS-induced anxiogenic activity in the EPM in a dose related manner, and these data were comparable to that seen after fluoexitine (10 mg/kg, p.o.) pre-treatment. Assay of brain homogenates showed that TDS resulted in elevations in brain IL-6 and lowered corticosterone levels in both hippocampus and prefrontal cortex, which were also reversed after Ws treatments. TDS also induced changes in brain oxidative stress markers, vi elevated MDA and reduced GSH levels as compared to controls. Ws pretreatment reversed the TDS-induced changes in brain MDA and GSH levels in both hippocampus and prefrontal cortex. These results indicate that Ws could have potential as an effective strategy for treating PTSD and its attenuating effects on anxiogenesis, neuroinflammation and oxidative stress could contribute to this effect.

JH/IASTAM2022/SL15

A scientific approach of management of chronic kidney disease through Indian traditional poly herbal formulation

Sanjay Kumar Sinha[1], S N Gupta[2], Shweta Srivastava[3]

[1]Sr. Ayurveda Consultant, Kamlesh Ayurvedic Hospital & Panchkarma Centre, Gomti Nagar, Lucknow

[2]Vice-Chancellor Maganbhai Maha Gujarat University, Nadiad

[3]Lecturer Chemistry, Government College, Lucknow

Traditional herbal medicine have been used by humans for over 5000 year's. Herbal medicine are made by plants, some plant like Punarnava (*Boerhavia diffusa*), Guduchi (*Tinospora cordifolia*), Gokshura (*Tribulus Terrestris*), Kasni (*Cichorium intybus*), Sariva (*Hemidesmus indicus*), Haridra (*Curcuma amada*) etc are known for nephroprotactive, anti-oxident and anti-inflammatory property. The proposed study aimed to evaluate the effectiveness of Indian traditional herbal compound and niruhe vasti in the management of CRF, to give the systemic proof through the study which show the certain treatment of traditional herbal drugs correct the kidney function. All the patient's were selected in my hospital, total 20 patient with CRF were enrolled for study. Patients with clinically positive history of CRF, having clinical characteristics of CRF, evaluated Sr. Creatinine, Urea, BUN, Sodium, Potassium etc were included. Major systemic that may interfere the cause of treatment such as uncontrolled diabetic mellitus, artificial pacemaker, and HIV associated nephropathy etc. All the patient were assessed before and after treatment. All the hematological factor show betterment. EGFR which is prominent of kidney functioning improved and show stable increase in GFR. The results of study will help in developing a very cheap and safe treatment for the management of Chronic Renal Failure ie CRF Traditional Herbal medicine (Ayurvedic Medicine) and treatment can't only treat but also can help to repair the kidney function.

JH/IASTAM2022/SL16

Sugar based Unani formulations: An urgent need of re-designing?

Shahid Shah Chaudhary*

Department of Ilmul Saidla, School of Unani Medical Education & Research, Jamia Hamdard, New Delhi
***Corresponding author:** sschaudhary@jamiahamdard.ac.in

The globe today faces as epidemic of non-communicable diseases (NCD), which will soon surpass communicable diseases both in the developing and developed world. India is no exception, the diabetic population in the country is close to hitting the alarming mark of 69.9 million by 2025 and 80 million by 2030. This denotes that the developing country is expected to witness an increase of 266%. According to report of WHO, nearly one out of every ten person aged 18 years and above in India has raised blood glucose level. Under these circumstances it is very difficult for Unani physicians to prescribe medicines to their patients, as plenty of Pharmacopeial formulations are sugar-based. In this situation Unani Physicians get puzzled and feel very helpless as no substitute of these sugar-based formulations is mentioned in Pharmacopeia. Amid COVID-19 pandemic situation Ministry of AYUSH and CCRUM has released advisories of Unani medicine for practitioners as well as for common peoples. In these guidelines various single and compound drugs having antiviral and immunity enhancing effects are mentioned, but mostly compound formulations are sugar-based like *Khamira Banafsha*, *Khamira Marwareed*, *Sharbat Sadar, Sharbat Toot Siyah, Laooq Sapistan* etc. with a clear indication *"not recommended for diabetics"* and additionally with a note *"Unani physicians attending to the patients may modify the dose / dosage form as per age of the patient and severity of the disease.* This shows that authorities try to escape the liability and leave all the things to the physicians. Bulkiness, difficult to carry, tough to get exact dose, palatability, stability etc. are some other drawbacks of sugar-based formulations. Therefore, these sugar-based medicines must be redesigned into their non-sugar variant. Keeping in mind these facts, redesigning of sugar-based dosage form into non-sugary forms is the need of hour. But on the other hand, safety and therapeutic efficacy of these classical formulations are time tested, hence, newly designed or re-designed dosage forms must undergo the rigorous quality control and safety trials.

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Evaluation of anti-anxiety effect of lactobacillus Helveticus NS8 strain probiotic in caffeine induced anxiety model in rats.

Siraj Anwar*, Pooja Verma

GD Goenka University, Sohna - Gurgaon Rd, Sohna, Haryana 122103
***Corresponding author**: 9911522866, sirajanwar85@gmail.com

Serotonin system modifications have been linked to an increased sensitivity to anxiety-related diseases. Probiotics' potential as a new therapy for anxiety may have a significant influence on individuals seeking antianxiety therapy through lowering the stigma, delay & adverse impact related with traditional antianxiety therapy. There is no topical preparation of lactobacillus helveticus present in the market. Therefore, we prepared the gel formulation to be applied on the forehead to evaluate if without gut-microbiota the probiotic will be able to reduce the symptoms of anxiety. The main aim of the study was to evaluate the effect of Angiotensin receptor blocker, Probiotic (oral) and probiotic gel in caffeine-induced anxiety model. The study was conducted in six groups (n=6). The anxiety was induced in rats at the dose of 25 mg/kg given via intraperitoneal route for 14 days. Blood samples, body temperature, glucose measurements, elevated plus maze and serotonin levels were evaluated prior to the trial. Caffeine was given intraperitoneally to G1-G5 rats at a dosage of 25 mg/kg. For groups 3 and 4, a probiotic formulation was given orally following the caffeine dosage. In group 5, a probiotic topical gel (30 mg) was given topically to the animals' foreheads. Diazepam (1 mg/kg) was given to group 2 animals. The body weight was not changed significantly throughout the study period in all the groups. When compared to the anxiety control group, there was no statistical significance in either of the groups' glucose levels. There was no statistical significance in Hemoglobin (Hb) levels of animals on day 14 when we compare with anxiety control group. There was no statistical significance in rectal temperature of animals. Whereas there was significance increase in latency time (time spent) was observed in group 2 & group 6 when compared to anxiety control group on day 14. Probiotic high dosage and probiotic topic gel treated animals similarly spent significantly more time in open arms than anxiety control animals ($P < 0.01$). Low serotonin levels were observed in the anxiety control rats. However, serotonin was improved in the treatment group.

JH/IASTAM2022/SL18

Simple interface to combine high-performance thin-layer chromatography with electrospray ionization mass spectrometry and flame atmospheric pressure chemical ionization for the detection of food and drug analysis

Suhail Muzaffar Bhat, Sy-Chyi Cheng, Jentaie Shiea

Department of Chemistry, National Sun Yat-Sen University, Kaohsiung, Taiwan
***Corresponding author**: suhailmuzaffarbhat@gmail.com

Mass spectrometry (MS) is one of the most sensitive analytical techniques for the detection of chemical compounds. Previously, several interfaces for coupling high-performance thin-layer chromatography (HPTLC) with MS have been developed to characterize the analytes on developed HPTLC plates. However, the detachment of HPTLC gel particles during HPTLC–MS analysis may affect the detection efficiency of analyte ions and damage turbomolecular vacuum pumps if gel particles enter the mass analyzer. This study developed an extremely simple interface to combine HPTLC with MS for the detection of analytes on an HPTLC plate with minimum detachment of silica gel particles. The technique was applied to characterize the dye mixtures and drugs adulterated in herbal products as well as alkaloids in plant extracts, which were all separated on the HPTLC plate, respectively. The track on an alumina-based HPTLC plate was centrally bifurcated with scissors to form two sawtooth HPTLC pieces, with each piece containing 17 triangle tips. The sawtooth HPTLC pieces were then positioned on an XYZ stage, with the first triangular tip on one HPTLC piece pointed toward the inlet of the mass analyzer. A drop of methanol and high direct current voltage (5 kV) was applied at the tip to induce electrospray ionization (ESI) for the following MS detection of analytes at the tip. The HPTLC piece was then moved so the second triangular tip was pointed toward the MS inlet for the next analysis. The process was repeated until all 34 triangular tips on two sawtooth HPTLC pieces were analyzed. Sawtooth HPTLC-ESI/MS allows the detection of analytes on both visible and non-visible bands, and the spatial resolution of the approach was determined to be approximately 1.5 mm/ band (50 mm/34). Sawtooth HPTLC-ESI/MS was utilized to characterize a mixture of dye standards and food dyes extracted from candy. The limits of the detection of dye standards such as rhodamine B and patent blue V were 0.25 ng/band. The technique was also applied to determine active ingredients in herbs such as ginseng and traditional Chinese medicines (TCM). In addition to the active and toxic alkaloids in herbal plants, drugs such as sildenafil, acetaminophen, chlorpheniramine, and dextromethorphan laced in TCM were also detected. The experimental results obtained in this study have demonstrated that sawtooth HPTLC-ESI/MS is a useful technology in the areas of food safety, herbal medicine, and natural products.

Desorption atmospheric pressure chemical ionization (DFAPCI) has been demonstrated to directly characterize chemical compounds on surfaces. DFAPCI-based interface combining thin layer chromatography (TLC) and mass spectrometry (MS) was developed to characterize a mixture. A micro oxyacetylene flame torch was generated and directed towards the developed TLC plate for simultaneous thermal desorption and ionization of analyte spots on surface. Volatile and semi-volatile samples such as amine and amide standards, drug molecules, and aromatherapy oil were successfully characterized by this TLC-DFAPCI/MS system.

JH/IASTAM2022/SL19

Bisphosphonates in phenytoin-induced bone disorders

Suruchi Singh

Jamia Hamdard

***Corresponding author**: singhdruruchi@gmail.com

Chronic administration of phenytoin (PHT) has been associated with bone loss. Bisphosphonates [alendronate (ALD), ibandronate (IBD) and risedronate (RSD)] being potential candidates to prevent PHT-induced bone disorders. The present study evaluated their effect on the antiepileptic efficacy of PHT. The PHT-induced depletion in folic acid (FA), vitamin B6 and vitamin B12 results in hyperhomocysteinemia. The elevated circulating homocysteine (hcy) could be a risk indicator for micronutrient-deficiency-related osteoporosis *via* generation of free radicals. Thus, an attempt was also made to unravel the PHT's and bisphosphonates's effect on hcy. Male mice received PHT (35mg/kg, *p.o.*) for 90 days to induce bone loss. ALD, RSD and IBD were administered orally at doses 0.65 mg/kg, 0.33 mg/kg, 0.17 mg/kg respectively, for prevention and 1.3 mg/kg, 0.65 mg/kg, 0.33 mg/kg respectively, for treatment of PHT-induced bone loss. The bone loss was confirmed by bone mineral density (BMD) analysis and bone turnover markers. Serum levels of hcy and FA were estimated alongwith hydrogen peroxide levels and total antioxidant capacity in order to assess the antioxidant profile of bisphosphonates. The induction of bone loss by PHT was marked by lowered BMD and altered bone turnovers. ALD and RSD administration to PHT treated groups significantly reverted the bony adverse effects. No such effects were observed with IBD. In the bisphosphonates treated groups, hcy levels were statistically at par with the control group. PHT at 35 mg/kg, p.o. could compromise bone mass and thus, could be a model of bone demineralization in mice. The ALD, IBD and RSD have no pharmacodynamic interaction when administered along with PHT at the experimental level. Thus, their usage in the management of PHT-induced bone disease could be worthwhile if clinically approved.

JH/IASTAM2022/SL20

Cupping Therapy in Dermatology

Umar Jahangir[1*], Masarat Fatima, Mohd Maaz[2], Shaista Urooj[3]

[1]Department of Amraze Jild wa Tazeeniyat, SUMER, Jamia Hamdard

[2]Department of Mahiyatul Amraz, SUMER, Jamia Hamdard

[3]RRIUM, New Delhi
***Corresponding author**: umar@jamiahamdard.ac.in

In recent years cupping therapy has gained worldwide acceptance because of its effect in not only managing chronic painful conditions but also due to its role in different lifestyle disorders and general wellbeing. This therapy particularly shot to fame after the Rio Olympics in 2016 where Swimmer Michael Phelps was often seen with red cupping marks during the competition. However, its efficacy is not restricted to pain management alone. Beyond the appearance of bumps over the surface of the skin, the cupping therapy manipulates the hemodynamics of the underlying tissue. Further evacuating the body of Morbid humour (Istifragh) and enhancing local circulation.This study sum up the available evidence of efficacy of cupping therapy in different skin disorders. For literature review search engines of Scopus, Google scholar, Science direct, Pubmed and other relevant websites were explored with keywords like cupping therapy, Hijamah, dermatological disorders, psoriasis, eczema, alopecia and ulcers. Because of the local and central effect of cupping therapy particularly on the hemodynamics, justifies its indications mentioned in classical Unani literature. Cupping therapy has shown astounding effect in curbing many stubborn dermatological disorders like psoriasis and eczema with high relapse rate into complete or minimal relapse. Cupping therapy not only restores the normal perfusion but through the local hemodynamic changes, modulates immunity and hastens the natural process of healing and cure. In this review we will delineate with the use of cupping therapy in different dermatological conditions on the lines of evidence-based medicine.

JH/IASTAM2022/SL21

Multiplicity of targets exhibited by certain herbal/mineral formulations against antibiotic-resistant pathogenic bacteria

Vijay Kothari*

Institute of Science, Nirma University, Ahmedabad, India
***Corresponding author**: vijay.kothari@nirmauni.ac.in, 9998365230

We have been investigating anti-pathogenic activity of certain polyherbal formulations (*Panchvalkal,* Herboheal, Enteropan®) and multicomponent plant extracts (*Punica granatum* peel extract, *Emblica officinalis* seed extract) against some WHO/CDC-listed multidrug resistant pathogenic bacteria- *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Serratia marcescens*, etc. The main aim of this study was too elucidate the mechanistic details underlying the anti-pathogenic activity of certain anti-pathogenic plant extracts. *In vivo* anti-virulence activity of the test extracts against the bacterial pathogens was evaluated in the model host *Caenorhabditis elegans*. Molecular details regarding mode of action of the bioactive extracts were elucidated through a whole transcriptome approach. These extracts did exhibit significant *in vivo* anti-virulence activity against the test pathogens in the model host *Caenorhabditis elegans*. A common mechanistic trait associated with each of these extracts was 'multiplicity of targets', wherein each of them influenced differential expression of multiple genes in target bacteria i.e. no single gene/protein/pathway in bacteria can be pinpointed as the sole major target of any of these extracts. Similar multiplicity of targets was also found to be involved in our investigation on antibacterial effect of a silver (an important ingredient of Traditional Medicine) formulation (Silversol®). Such multitargeted action can have important implications with respect to combating the global AMR pandemic, as the probability of emergence of resistant phenotype among pathogenic bacteria against such polycomponent therapeutics can be expected to be quite low.

JH/IASTAM2022/SL22

Clinical aspect of Ayurvedic harbal preparation for the treatment of iron deficiency anemia

Vikas Dubey*

BVDU, College of Ayurved, Pune
Corresponding author: drvikas889@gmail.com, 8959251688

Iron deficiency anemia is the most widespread nutritional disorder in the world. Prevalence of anaemia in Indian subcontinent is high because of low dietary intake, poor availability of iron and chronic blood loss due to hook worm infestation and malaria. Numbers of preparations are available in Ayurveda for correction of Iron deficiency anemia. This study was conducted to investigate the efficacy of two Ayurvedic formulations Dhatri louha and Novayas louha in anaemic patients. It was a randomized, non-blinded, and placebo controlled pre-posttest design. Total thirty patients were divided into three groups. Each group contained 10 numbers of patients. Group 1 (control group) was given one starch capsule daily for 30 days and Group 2 and Group 3 were given two Ayurvedic formulations Dhatri louha and Novayas louha respectively in a dose of 250 mg twice a day for 30 days. Hematological parameters like hemoglobin concentration, packed cell volume, mean corpuscular volume, mean corpuscular hemoglobin and mean corpuscular hemoglobin concentration were determined before and after completion of treatment. After the 30 days of treatment it was found significant ($p<0.05$) response in Group 2 and Group 3 when compared with Group 1. Therefore, it claimed that Dhatri louha and Novayas louha have haemopoetic function although it was a preliminary effective. In conclusion it is apparent that two Ayurvedic preparations are effective, well tolerated and clinically safe for correction of iron deficiency anemia. The results of this study indicate the improving nutritional anemia which needs to be ascertained a larger scale in multi-centre study.

JH/IASTAM2022/SL23

In-silico analysis of metabolic profile of essential oils from capitula of *Tagetes spp.* grown in water deficit stress as potential herbal drug in several acute and chronic diseases

Yasheshwar[1*], Sayeed Ahmad[2]

[1]Bioactive Natural Products Laboratory, Jamia Hamdard, New Delhi-110062, India

[2]Department of Botany, Acharya Narendra Dev College (University of Delhi), Govindpuri, Kalkaji, New Delhi-110019, India
Corresponding author: yasheshwar@andc.du.ac.in, 9810133500

Tagetes species, traditionally used as an anti-oxidant, anti-diabetic, neuroprotective, diuretic, etc. As far as deficit irrigation strategies are concerned, little information is available on *T. erecta* and *T. patula* about their volatile principles in relation to oxidative stress-induced inflammation and associated complication. Due to the lack of scientific evidence based on its molecular mechanism involved in the alleviation of oxidative stress-induced inflammation and associated complication, the study explored its multi-mechanistic and therapeutic role using in-silico approaches in relation to water deficit stress. Screening of 12 cultivars of *T. erecta* and *T. patula* grown under water defcit stress. Metabolic profile of selected cultivars was performed through GC-MS followed by Network pharmacology, ADME, Molecular docking and Gene Ontology. Secondary metabolites enhancement is positively correlated with degree of deficit irrigation invariably for all volatile principles and give rise to prospectives on these ornamental genus as potential antioxidant agent. SwissADME analysis revealed significant distribution and skin permeability with log Kp value of alpha-pinene (-3.95), Limonene (-3.89), Methyl eugenol (-5.6), Linalool (-5.13). We conclude that secondary metabolites of Tagetes origin have and hence place *Tagetes* as a potential herbal drug for alleviating several acute and chronic discease like chronic kidney disease, brain disorder, leucopenia, etc.

JH/IASTAM2022/OP24

Pharmaceutics: The way forward for traditional medicine

Amit Sah[1], **Foziyah Zakir[2]***

[1]Department of Pharmaceutics, Delhi Institute of Pharmaceutical Sciences and Research, Delhi Pharmaceutical Sciences and Research University, New Delhi 110017, India

[2]Department of Ayurvedic Sciences, School of Pharmaceutical Sciences, Delhi Pharmaceutical Sciences and Research University, New Delhi 110017, India
***Corresponding author**: 9899443116, foziyahzakir@dpsru.edu.in

Chamomile oil has been used as a therapeutic agent for a very long time. It has a wide range of medicinal properties such as anti-inflammatory, wound healing, skin diseases etc. Studies have suggested that chamomile oil possesses constituents which can be beneficial for the treatment of migraine. However, chamomile oil exhibits several limitations which prevent its use in bare form. Therefore, the present work highlights how novel delivery system can be clubbed with traditional Ayurvedic preparations to enhance the patient acceptance as well as therapeutic performance. The work involves development of nanoemulsion formulation of chamomile oil. The nanoemulsion was prepared and characterized for various physical attributes. The in-vivo testing of the formulation was carried out on animals to test its potential against migraine. The formulation was successfully prepared with a size of 22 nm, PDI 0.23 and zeta potential -6.27 mV. The nanoemulsion was converted into a gel for ease of application and the necessary attributes were found to be satisfactory. The in-vivo studies demonstrated enhanced anti-migraine potential when compared to pure chamomile oil. The results proved that incorporation of traditional medicine into a novel delivery system can enhance its therapeutic potential.

JH/IASTAM2022/HAH01

Phytocheical analysis and *In vitro* anti-bacterial potential of Lomba and ginger essential oil: A synergy based approach

Amit Kar[1], Rupesh Banerjee[1], Barun Dasgupta[2], Indira Devi [1], Nanaocha Sharma [1], Pulok K. Mukherjee [1,2] *

[1]Institute of Bioresources and Sustainable Development (IBSD), Takyelpat, Imphal, Manipur - 795001 (India)

[2]School of Natural Product Studies, Dept. of Pharmaceutical Technology, Jadavpur University, Kolkata 700032 (India)
***Corresponding author**: Phone: +91-385 2446121, naturalproductm@gmail.com

Infectious diseases have challenged the survival of mankind since the dawn of human history. Medicinal plants and derived secondary metabolites are proven to have potential antimicrobial activity. The North-East India is a rich resource of medicinal plants. The recent trend is to search new antimicrobial from different medicinal plants to fulfill the unmet necessity of modern antimicrobial therapy. Two medicinal plants i.e. *Elsholtzia griffithii* (Lomba) and *Zingiber officinale* (ginger) are commonly used in different food preparations in Manipur. Traditionally these plants are used to treat fever, cough and also used as antiseptic among the tribal people of NER. This study was designed to explore the combinatory antimicrobial effect of lomba and ginger essential oil together with their phytochemical profiling for quality evaluation and scientific validation. Lomba and ginger essential oil was isolated by microwave assisted hydrodistillation followed by identification and metabolite profiling by GC-MS. In-vitro antimicrobial activity was further performed against both gram positive and negative normal strains and clinical isolates by standard method. Combinatory effect was performed through Compusyn software 2.0. GC-MS analysis revealed the identification of 20 compounds in each essential oil by integrating NIST library. *In-vitro* antimicrobial activity showed efficacy against gram positive. The time dependent growth curve analysis showed time dependent growth reduction. The combination synergy based analysis of these two essential oils showed better effectiveness on bacterial strains. The present study reveals that the lomba and ginger essential oil in combination showed antibacterial potential and may be useful for the development of potent antimicrobials/ food preservatives.

JH/IASTAM2022/HAH02

Physiological effects of Mustadi Yapana Basti on reproductive biomarkers in infertile males: An open-labeled clinical trial

Ankur Kumar Tanwar[1*], Sujata Rajan[2], Manoj Kumar Shamkuwar[3]

[1]Dept. of Kriya Sharir, All India Institute of Ayurveda, New Delhi

[2]Dept. of Kriya Sharir, Ayurvedic and Unani Tibbia College and Hospital, New Delhi

[3]Dept. of Panchakarma, Ayurvedic and Unani Tibbia College and Hospital, New Delhi
***Corresponding author:** ankurkumartanwar1@gmail.com, 9250868756

Reproductive health or fertility is always a necessity from time immemorial. The essential factors for Healthy Progeny or Reproduction are Ritu (reproductive age and ovulation period), Kshetra (female reproductive tract), Ambu (nutritional factors), and Bija (sperm and ovum). Conception or Reproduction is possible when the whole reproductive system works well. The malfunction of the system causes infertility. An open-label clinical study was designed in Delhi to evaluate the physiological effect of Ayurvedic intervention (Mustadi Yapana Basti) on reproductive biomarkers in infertile males. The aim of this study was to evaluate the clinical effectiveness of Mustadi Yapana Basti on reproductive Biomarkers (Serum FSH, Serum LH, Serum Inhibin-B, Serum Testosterone) and semen parameters. An open-labeled clinical trial was conducted on 22 participants fulfilling the inclusion criteria from OPD of Ayurvedic and Unani Tibbia College and Hospital, Govt. of NCT Delhi and administered with Mustadi Yapana Basti 600 ml per rectum daily in the morning, empty stomach before food for 15 with follow up 15 days after completion of the trial period. The drug showed statistically significant results in the improvement of serum biomarkers of spermatogenesis (Serum FSH, Serum LH, Serum Inhibin-B, and Serum Testosterone) without showing any side effects. Mustadi Yapana Basti produced a significant increase in serum testosterone ($p < 0.001$) and total sperm count ($p < 0.01$). It enhanced the hormonal assay essential for sperm production, and sperm maturation along with effectively raising the sperm count, semen volume, morphology, and motility. Mustadi Yapana Basti has the best Brimhana, Vrishya, Vatahara, and Rasayana properties. Mustadi Yapana Basti has a positive impact on the reproductive profile along with semen parameters. The trial was registered with the Clinical Trials Registry- India (CTRI registration number: CTRI/2019/08/020538.

JH/IASTAM2022/HAH03

Improved early insulin resistance & TyG index after administration of herbal origin β-sitosterol in Pre-diabetic rats.

Asema Mahveen[1], Hifzul Kabir[2], Mir Yousuf Ali[3]

[1]Department of Ilmul Advia, LUMC, Karnataka
[2] Department of Ilmul Advia, SUMER, Jamia Hamdard, New Delhi
[3] Department of Ilmul Advia, GNTC, Telangana
***Corresponding author**: drasema10@gmail.com

'Prediabetes' is a term used to describe people with impaired fasting glucose (IFG) having a higher risk of developing type 2 diabetes and its complications. People with IFG were 319.0 million with prevalence rate of 6.2% all over the world in 2021. Thus, just estimating the numbers of Pre-diabetics is not enough. The ultimate objective of the present study is to provide the therapeutic approach to the putative biomarkers of prediabetes such as TyG index, HOMA-IR index and associated metabolic perturbations. The present study was performed to evaluate the therapeutic role of herbal origin beta-sitosterol (BS) on Prediabetes (early insulin resistance) by inducing metabolic syndrome in rats. Five groups of 16-week-old Wistar rats were tested during a 9 week protocol. All groups received high fat diet (HFD) to mimic the metabolic conditions of prediabetes except control group. Administration of BS in HFD rats significantly decreases IFG, cholesterol ($P<0.05$) and improvement in TyG, HOMA-IR index more pronounced in High dose test group ($P<0.001$). The present study reveals the best biomarkers for Prediabetes assessment and the amelioration of early insulin resistance changes preventing further metabolic clustering on BS administration.

JH/IASTAM2022/HAH04

Phytochemical characterization and synergistic antimicrobial potential of shahtoot against food borne pathogenic bacteria

Bisma Jan[1,2], Sayeed Ahmad[1,2*]

[1]Department of Food Technology, School of Interdisciplinary Science & Technology, Jamia Hamdard New Delhi, India

[2]Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education & Research, Jamia Hamdard, New Delhi, India
***Corresponding author**: Phone: 9891374647, sahmad_jh@yahoo.co.in

In unani medicine shahtoot is used to cure throat infection. It is rich in flavonoids and anthocyanins and is an alternative for obtaining natural ingredients of functional foods, medicinal compounds or pharmaceuticals. In the present study phytochemical analysis, *in vitro* antimicrobial activity, synergistic effect of *Morus alba* fruit extract (MAE) and *Morus nigra* fruits extract (MNE) against *Staphylococcus aureus* and *Escherichia coli* was analysed. The well diffusion and broth microdilution methods were performed to check the antibacterial activity against *E. coli* and *S. aureus*. Furthermore combinational study was also performed through the microdilution check board method. The present study also resulted in the development and validation of a high-performance thin-layer chromatography densitometry method for the identification and quantification of rutin in MAE and MNE. MNE showed MIC at 10 mg/mL against *E. coli* and 5 mg/mL against *S. aureus* while as MIC of MAE was determined at 5 mg/mL against *E. coli* and 2.5 mg/mL against *S. aureus*. Furthermore, four combinations showed synergistic interactions while other two showed additive interactions. The validated HPTLC method can be routinely used for the quality control and standardization of the bioactive marker rutin. Some essential fatty acids like palmitic acid, stearic acid, linoleic acid, and erucic acid were abundantly found in both the extracts. The outcomes of this study revealed that MAE and MNE could be used as an additive to foods and also as a promising source to obtain new and effective herbal medicines to treat infectious diseases.

JH/IASTAM2022/HAH05

Network pharmacology-based exploration of multi-targeted therapeutics approach of Indian UNANI medicinal plant "Bishkhaparaa" in attenuation of renal dysfunction via regulation of redox and inflammatory signaling pathway

Gaurav[1], Rabea Parveen[2], Sayeed Ahmad[1,2]*

[1]Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India

[2]Department of Pharmaceutics, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India

[3]Centre of Excellence (CoE) in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi-110062, India
***Corresponding author:** sahmad_jh@yahoo.co.in, 9891374647

Renal insufficiency is acknowledged as the most prevalent health issue and characterized with progressive kidney dysfunction. Bishkhaparaa (*Boerhavia diffusa* L.) is a well-known Indian UNANI medicinal plant used to mitigate several ailments including renal disease. Due to lack of multi-targeted therapeutics evidence, the present study is aimed to explore the molecular mechanism of Bishkhaparaa in attenuation of renal insufficiency. GC-MS and HPTLC analysis was performed for quality-based standardization of Bishkhaparaa followed by ADME and toxicity analysis of identified metabolites in Bishkhaparaa. The metabolites identified through GC-MS and HPTLC metabolites showed direct correlation with lipophilicity and permeability concerning a good bioavailable response. In the network pharmacological analysis, ten metabolites were found to have significant interactions with the genes such as NOSs, REN, TNF, ILs, CASPs, INS, AGTR1, ATG, etc involved in kidney disease. The results of *in-vivo* study showed that Bishkhaparaa exhibits nephroprotective via regulating oxidative markers (MDA, NO, SOD and CAT, GSH) and inflammatory markers (TNF-α, IL-1β and CASP-3) and the histology of kidney. Hence, the study concludes that Bishkhaparaa play an important role in the kidney malfunction via regulation of hypertension, diabetic nephropathy, oxidative and inflammatory stress and regulation of the body's salt and water balance, thus strengthening normalcy of kidney function.

JH/IASTAM2022/HAH06

Amelioration of diabetes via modulation of hyperglycemia, dyslipidemia and oxo-inflammatory status by *Picrorhiza kurroa* extract in HFD/STZ-induced diabetic mice

Mohammad Ibrahim[1*], Rabea Parveen[2], Sayeed Ahmad[1]

[1]Bioactive Natural Product Laboratory (BNPL), SPER, Jamia Hamdard, New Delhi, India

[2]Department of Pharmaceutics, SPER, Jamia Hamdard, New Delhi, India
***Corresponding author:** ibrahimhayat91@gmail.com, 9871142453

Diabetes mellitus (DM) encompasses a group of metabolic disorders that badly harm human life and the country's economies. Its intricacy has seriously associated with the burden of disability and mortality. Though, development of any preventive or therapeutic medicine is need of the hours. This study aimed to explore the ameliorative efficacy of *Picrorhiza kurroa* rhizome extract in a diabetic mice model induced by a high-fat diet (HFD) and streptozotocin (STZ). *P. kurroa* hydroalcoholic extract (HPK) was used for the evaluation of antidiabetic potential. In addition cytotoxicity, cytoprotective, and cellular antioxidant studies were also evaluated in the $HepG_2$ cell line. The study revealed a significant amelioration of all the measured parameters in diabetic mice. Results demonstrated that HPK exhibited excellent cell compatibility and antioxidant effect against glucose- persuade hyperglycemia in $HepG_2$ cells. The blood glucose level, dyslipidemia, and level of TNF-α, IL-6, and IL-1β were remarkably ($p < 0.05$) reduced in diabetic mice after oral intake of HPK. Moreover, HPK treatments improve the state of antioxidant enzymes of the liver such as SOD, CAT, GPx, and MDA. Histopathological analysis of the treatment groups revealed restoration of pancreatic β-cell damage hence confirmed the antidiabetic efficacy of HPK. These outcomes indicated that HPK not only ameliorates hyperglycemia, dyslipidemia, and oxo-inflammatory status but also protects the damage of pancreatic β-cells. Therefore, HPK might be used as promising therapy for the treatment of diabetes.

JH/IASTAM2022/HAH07

Design and development of a Unani classical Zimad formulation into a novel transdermal antiemetic emulgel

Mohd Nauman Saleem*, Mohammad Idris

Post Graduate Department of Ilmul Saidla (Unani Pharmaceutics), Ayurvedic & Unani Tibbia College and Hospital, Karol Bagh, New Delhi
***Corresponding author:** naumansaleem.autch@gmail.com, 9871505359

The transdermal drug delivery system is one of the novel routes for systemic delivery of drugs through healthy intact skin. There are a number of Unani formulations mentioned in classical literature which upon topical application to skin exhibit systemic action. Zimad-e-Khardal based on the ingredients Khardal (*Brassica nigra*) and Sirka (Vinegar) is one such formulation which is applied over abdomen to inhibit nausea and vomiting. But it has certain limitations and drawbacks. The aim of this study was to prepare Zimad-e-Khardal (F1) as mentioned in classical literature and redesigning of zimad into a transdermal emulgel (F2). Both F1 and F2 were prepared and analyzed on different physico-chemical parameters with comparative permeation analysis of both the dosage forms. The *in-vitro* transdermal permeation analysis was carried out through Franz diffusion cell using egg shell membrane as the barrier membrane for permeation. Phosphate buffer with pH 7.4 was used as dissolution medium and the temperature of the cell was maintained at 37±1°C. The samples collected at regular time intervals were analyzed using UV-Visible Spectrophotometer. The permeation analysis of both F1 and F2 showed a time dependent increase throughout the study but the percentage cumulative drug release from F2 was significantly high as compared to F1. The study clearly shows a novel approach to work in Unani Pharmaceutics. Clinical study to evaluate the therapeutic efficacy of the novel dosage form should also be envisaged in future.

JH/IASTAM2022/HAH08

Blood pressure measurement in overweight, underweight and normal BMI undergraduate students of Ajmal Khan Tibbiya College hospital: correlation of BMI with blood pressure

Mohd. Usman[1*], S.M. Safdar Ashraf[2], Mohd. Akram[3]

Department Tahaffuzi wa Samaji Tib, School of Unani Medical Education and Research, Jamia Hamdard, New Delhi, India

[2]Department of Tahaffuzi wa Samaji Tib, Aligarh Muslim University, Aligarh, Uttar Pradesh, India

[3]Department Tahaffuzi wa Samaji Tib, School of Unani Medical Education and Research, Jamia Hamdard, New Delhi, India
***Corresponding author:** mousman2010@gmail.com

Hypertension is also known as silent killer. Early detection is the key for successful management and treatment of hypertension. In maximum studies higher BMI has been associated with increased risk of elevated blood pressure. Weight related problems has been detected in various University students in earlier studies. The medical students were found to be at greater risk due to sedentary life style and other factors. That's why, the present study was undertaken to measure blood pressure and BMI of undergraduate BUMS students and find correlation with them. 230 students were enrolled in the study. BMI (Kg/m2) and blood pressure (mm Hg) were measured. The data was analyzed using appropriate statistical tests. BMI was 22.54±2.85 and 20.75±2.99 Kg/m2 respectively in males and females ($p<0.00$ 1). 17.39% and 13.04% were found to be underweight and overweight respectively. SBP and DBP in males and females was found to be 120.54±9.48/79.71±4.77 and 110.80±0.98/74.40±5.45 mmHg respectively ($p<0.001$). Overall 166 (72.17%), 55 (23.91%) and 9 (3.9 1%) were found to be normo, pre and hypertensive, respectively. Significant positive correlation of BMI with SBP and DBP was found both in males and females. There is weight related concerns and associated complications like elevated blood pressure in medical students.

JH/IASTAM2022/HAH09

Pharmacological studies on the anti-inflammatory and anti-airway remodeling effects of *Withania somnifera* in an experimental model of bronchial asthma

Nafaa Hasan Ali*

Department of Pharmacology, HIMSR, Jamia Hamdard, New Delhi, 110062, India
***Corresponding author:** nzobaidi99@gmail.com

Airway inflammation in bronchial asthma involves complex cellular and molecular pathways/mechanisms involving the interactions between immunological mediators produced by inflammatory cells. *Withania somnifera* Dunal (WS) is a well-documented and effectively used medicinal plant in Indian traditional systems of medicine (Ayurveda and Unani) with an immense potential for treating a wide range of illnesses. In view of this, the present study was designed to investigate the possible anti-inflammatory and immunomodulatory effects of WS root extract, and to elucidate the possible mechanisms involved in these effects in an experimental model of bronchial asthma in rats. In the experimental model for asthma, wistar rats (200-220 g) were immunized with intraperitoneal (i.p.) injection of 100 mg ovalbumin (OVA) adsorbed to 1 mg aluminum hydroxide [Al $(OH)_3$] on day 1, and challenged with 1 % OVA aerosol from day 14 to day 21. OVA immunized and challenged rats were exposed to different doses of WS extract (200 and 400 mg/kg), these effects were compared with standard drug, dexamethasone, and assessed on markers of airway inflammation and immunity in lung tissue and *bronchoalveolar lavage fluid* (BALF). Our results showed that treatment with WS extract dramatically attenuated OVA-induced airway remodeling through increasing expression of the anti-inflammatory cytokine, IL-10, downregulation of IL-13, TGF-β, hydroxyproline, periostin, as well as 8-HOdG, the oxidative DNA damage marker, in lung tissues and BALF in a chronic asthma model in rats. OVA-immunized and challenged rats and pretreated with higher dose of WS extract (400mg/kg) showed mild to moderate inflammatory cell infiltration, marked reductions in goblet cell hyperplasia, alveolar septae thickness, and interstitial fibrosis. These effects were similar to those seen in DEX group. Our study findings indicate that WS extract effectively counteracted the altered cellular and molecular marker profile of airway inflammation and remodeling in the experimental model of asthma, and it is inferred that WS could have potential as a therapeutic agent for the treatment of bronchial asthma.

JH/IASTAM2022/HAH10

Management of grade-2 essential hypertension with a polyherbal Unani formulation: A randomized standard controlled clinical trial

Nazneen Aiman Siddiqui[1*], Rais ur Rahman[2]

Department of Moalajat, Ayurvedic & Unani Tibbia College and Hospital, Karol Bagh, New Delhi
Corresponding author: aimansiddiqui14@gmail.com

Hypertension is the most common trigger for cardiovascular diseases and its co-morbidities. Hypertension *(Zaght ud dam Qawi)* is a chronic medical condition with persistent elevation of arterial pressure at rest. The 2017 ACC/AHA guidelines define Stage-2 hypertension as Systolic BP ≥140 mm Hg or Diastolic BP ≥ 90 mmHg. The proposed study aimed to evaluate the safety and efficacy of the Unani Polyherbal formulation in the treatment of Grade-2 Essential Hypertension and to achieve the expected target of blood pressure i.e. 120/80 mmHg (±10) during mental & physical rest. Sixty participants who fulfil the inclusion criteria were randomly allocated into the test and control group by *block randomization.* Test group was given capsule of 50% hydro-alcoholic extract of Unani Polyherbal formulation while control group was subjected to Tab. Telmisartan (40 mg) for 03 weeks. Test group has shown mean reduction of 22.07 mmHg in Systolic BP and 12.74 mmHg in Diastolic BP (p -0.001) while control group has shown mean reduction of 23.6 mmHg in Systolic BP & 14.6 mmHg in Diastolic BP (p- 0.001). Both the groups have shown similar reduction in BP. Test drug formulation is found to be safe & efficacious as control drug.

JH/IASTAM2022/HAH11

Integrated approach in the management of polycystic ovarian syndrome (PCOS)

Satish Khatal*, Seema Gholap, Kirti Bhati

Bharati Vidyapeeth Deemed to be University Collage of Ayurved Pune, Maharashtra, India
***Corresponding author**: srk1677@gmail.com

The ever changing trends in lifestyle have exposed women to a variety of metabolic disorders. Polycystic Ovarian Syndrome (PCOS) is one such lifestyle disorder affecting 30-40% of young females in their reproductive age in India. Lifestyle, mainly dietary interventions are first-line treatment for women with polycystic ovary syndrome (PCOS). Optimal dietary composition to be incorporated into a lifestyle management plan aimed at improving the clinical features of PCOS is unidentified. Energy-restricted dietary interventions have extremely low long-term compliance. Moreover, weight management is challenging, which appears to be even worse in PCOS patients, with a researchers have reported attribution in lifestyle intervention studies of up to 46% in women with PCOS. Nutritional guidance are one of the most appropriate and applied interferences to effect health of women. Hence, defining the optimal, balanced macronutrient dietary management for PCOS is of great importance, as dietary involvements would be an extremely appealing beneficial method to clinically manage PCOS pathology. However, this is challenging to achieve in humans due to the logistical challenges of diet design and compliance over prolonged periods required for sustained weight loss. Although PCOS is incurable, a healthy lifestyle and regimen with appropriate Diet and lifestyle is the key to longevity. The effectiveness of yoga as a remedy to deal the direct and indirect cause of ailment in the management of PCOS is to be recognized. This paper stresses the utility of Ayurved and Yoga remedy, exclusively focusing on dietary adaptation so as to enhance lifestyle.

JH/IASTAM2022/HAH12

Anti-allergic and anti-asthmatic potential of *Terminalia chebula* Retz and *Quercus infectoria* oliv as a substitute of plant *Pistacia integerrima* Linn

Satyendra Kumar

Jamia Hamdard
Corresponding author: satyendramathur80@gmail.com

This study was conducted to evaluate better or equivalent substitute herbs of *Pistacia integerrima* Linn, i.e. *Terminalia chebula* Retz and *Quercus infectoria* Oliv for their anti-allergic and anti-histamanic activity. Two types of extract were prepared, aqueous and hydroalcoholic, using Galls of *Pistacia integerrima* (P.I.) & *Quercus infectoria* (Q.I) *plant.* The fruit of *Terminalia chebula* (TC) was used for extract preparations. Total 6 extracts was formulated and labelled. These were then evaluated in anti-histamine *in vitro* assay in concentration of 1 µg/ml – 100 µg/ml using KU815 cells that are stimulated with Compound 48/80. Similarly, extracts were used in anti-asthmatic *in vitro* assay in concentrations ranging from 0.1 µg/ml to 250 µg/ml. Both extract of Q.I and T.C were relatively similar in the anti-allergic and anti-asthmatic effects to that of P.I extracts. Thus Q.I and P.I can be considered as the potential substitute of P.I

JH/IASTAM2022/OP1

Dual drug-loaded nanostructured lipid carrier with pharmacokinetic modulator approach to combat HIV-1 viral reservoirs

Abdul Muheem, Sanjula Baboota, Javed Ali

Department of Pharmaceutics, School of Pharmaceutical Education & Research, Jamia Hamdard, New Delhi-110062, India

The aim of the present work is to explicit development and characterization of nanostructured lipidic carriers (NLCs) via the oral route to overcome the inherent lacuna of antiretroviral therapy, in which Etravirine (ETR) and Darunavir Ethanolate (DRV-E) were used for treatment and management of HIV infection to improve their therapeutic efficacy. We optimized and fabricated Etravirine and Darunavir Ethanolate loaded nanostructured formulation (EDE-NLCs) with pharmacokinetic modulator (TPGS) via central composite design (CCD) using the modified solvent evaporation method. Various assessment parameters were used for characterization of nanoformulation such as mean particle size of 158 ± 1.56 nm, mean polydispersity index of 0.187 ± 0.003, mean zeta potential of -30.71 ± 0.003, entrapment efficiency of 93.5 ± 3.75% of ETR and 95.6 ± 2.25% of DRV-E, and drug loading was 8.94 ± 0.024% of ETR and 9.89 ± 0.041%. The structural analysis by TEM revealed the spherical size of NLCs and uniform drug distribution. An in vitro drug release study was established through the 0.05 N HCl pH 1.2, and phosphate buffer pH 6.8 with % cumulative drug release of almost 73.34 % of ETR and 82.34 % of DRV-E at the end of 24 h, compared to the suspension of Etravirine and Darunavir Ethanoate (EDE-S). The compatibility of NLCs to red blood cells was revealed by *in-vitro* haemolysis study that was compared with EDE-S and negative control (1% Triton solution). The confocal study revealed the depth of penetration of the drug into the intestine by EDE-NLCs was 35 µm which was 2.33 folds higher compared to EDE-S (depth was 15 µm). It can be concluded that EDE-NLC could serve as potential strategy to provide therapeutic benefits for the eradication of AIDS.

JH/IASTAM2022/OP2

***Riyazat's* role in the prevention and management of a wide range of illnesses, with a particular emphasis on urinary incontinence (*Salasal Baul*)**

Araf Fatma

Department of Tahaffuzi-wa-Samaji Tib, SUMER, Jamia Hamdard, New Delhi
Corresponding author: afatima.fatima@gmail.com, 7065185628

Riyazat (Exercise) consists of planned and well-structured bodily motions performed for a variety of health benefits, including strengthening of the cardiovascular system and muscles, weight loss or maintenance, enhancement of metabolic functions, and sometimes for enjoyment. *Riyazat* is one of the regimenal therapies that prevent the buildup of disease-causing substances in the body and channels them for natural elimination (*tanqiya e mawad*), thereby purifying the body and reducing the chance of contracting several ailments. In their treatise, numerous ancient Unani academics such as Buqrat (Hippocrates), Jalinoos (Galen), Razi (Rhazes), and Avicenna elaborated on the virtues of *riyazat*. The prevalence of lifestyle disorders such as Type 2 diabetes, hypertension, obesity, cardiovascular diseases, etc. is on the rise, and the burden of these diseases increases daily. Along with their prevalence, morbidity and mortality are also on the rise. Frequent and consistent physical activity aids in the prevention of many diseases, improves general health, prevents illnesses such as sleeplessness and depression, and promotes mental health and self-esteem. For the enhancement of life and to lessen the burden of lifestyle-related ailments on the healthcare system, regular exercise is required. *Riyazat*, Lifestyle diseases, and Regimen-based therapy are the key phrases for this article.

JH/IASTAM2022/OP3

Development of synergy based cosmetic formulation for depigmentation of skin using in vitro and TLC-MS-Bioautographic studies

Areeba Insaf[1,2], Sayeed Ahmad[1,2]*

[1]Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology)
***Corresponding author:** 9891374647; sahmad_jh@yahoo.in

The present study is aimed at developing a synergistic combination for maintaining the skin tone in people with uneven skin tone, with the help of ten commonly used Indian medicinal plants in the AYUSH system of medicine. The proposed study aimed to develop a synergy based cosmetic formulation for depigmentation using in vitro and TLC-MS-Bioautography. Alcoholic extracts of ten medicinal plants from the AYUSH system of medicine were prepared. These were subjected to in vitro antityrosinase activity, to find out the combination index of synergistic combination. Out of the ten extracts, alcoholic extracts of *Rubia cordifolia* (ARC) and *Nelumbo nucifera* (ANN) were selected for the development of synergistic combination based on their IC50 value in vitro antityrosinase assay. Qualitative analysis was performed using total phenolic compounds, total flavonoid compounds & antioxidant activity of each extract individually and of synergistic combination. HPTLC and TLC-bioautography for antioxidant and antityrosinase activity was performed. The plate was treated with tyrosinase enzyme to evaluate anti-tyrosinase activity of bands detected white in color against creamish background. The synergistic combination showed more phenolic and flavonoid contents with potential antioxidant potential. The TLC-bioautography showed two creamish spots in ARC, signifying purpurin and ellagic acid as tyrosinase inhibitory compounds while showing a creamish spots of antityrosinase active metabolite identified as quercetin and nuciferine in ANN. The observation of antityrosinase behavior with uneven skin tone people manifested that the synergistic combination showed comparable results to that of standard kojic acid, though the synergistic combination containing a higher concentration of ARC showed more appreciable results in ameliorating depigmentation. The study suggests that the synergy-based combination successfully maintained the skin tone by abating free radical and tyrosinase levels and providing a strong rationale for its use in the treatment of hyperpigmentation.

JH/IASTAM2022/OP4

Biochemical and pharmacological evolution of calcium in various diabetic model

Faris Al Toub*

King Abdulaziz University, Kingdom of Sauri Arabia

Corresponding author: faresmail@hotmail.com

Calcium is important in cell communication and vitality. Diabetic patients suffer from high glucose which may lead to high oxidative stress. The anti oxidative state is important in healthy cells and helps maintain the right oxidative state. We examined the effect of calcium on the different diabetic models of rats and measured the oxidative enzyme. We found that the enzyme superoxide dismutase (SOD), glutathione peroxides (GPx), and reduced glutathione (GSH) changes their levels due to calcium. This disturbance of oxidative stress changes the malondialdehyde (MDA) and did not have a huge effect on DNA fragmentation. In conclusion calcium has an effect on oxidative state.

JH/IASTAM2022/OP5

Pharmacological evaluation of Cannabinoids for management of neuropathic pain

Kamini, Neetu Kumari, Arshvir Kaur, Rajani Mathur*

Department of Pharmacology, Delhi Institute of Pharmaceutical Sciences & Research, DPSRU, New Delhi, INDIA
Corresponding author: 9818368655, mathurajani@gmail.com

Cannabinoids may hold potential as a safe and effective option for the management of chronic pain due to nerve injury. The aim of this study was to establish the effect of cannabinoids in an experimental model of chronic constriction injury (CCI) of sciatic nerve to induce neuropathic pain. Adult Albino Wistar rats were randomly divided into 5 groups (n=5 each), and subjected to either sham surgery (Sham), or surgical ligation of left sciatic nerve (CCI). For 21 days post surgery, treatment groups received 0.352ml/kg/d/po of cannabinoids. Each group was assessed weekly for pain perception and terminally for sensory nerve conduction velocity (SNCV). Cannabinoids significantly ($p<0.005$) increased latency of pain perception and SNCV. Cannabinoids significantly reduced hyperalgesia and improved sensory nerve conduction in the condition of neuropathic pain.

JH/IASTAM2022/OP6

Neuroprotective effect of guggulipid alone and in combination with aspirin on middle cerebral artery occlusion (MCAO) model of focal cerebral ischemia in rats

Md Afroz Ahmad[1*], A.K. Najmi[1], Mohd Mujeeb[2], M. Akhtar M[1]

[1]Department of Pharmacology, SPER, Jamia Hamdard, New Delhi, India and

[2]Department of Pharmacognosy and Phytochemistry, SPER, Jamia Hamdard, New Delhi, India
***Corresponding author**: 8368450301, ahmad.mdafroz@gmail.com

This study was designed to test the pre-treatment doses of guggulipid (50 mg/kg), aspirin (100 mg/kg) per orally and co-administration of both drugs for 28 days followed by middle cerebral artery occlusion – a model of focal cerebral ischemia in rats. Middle cerebral artery was occluded for two hours, followed by reperfusion for 22 hours for the induction of focal cerebral ischemia in rats. Neurobehavioral tests like locomotor activity and grip strength tests were performed before sacrificing the animal. After neurobehavioral tests, the animals were sacrificed for the measurement of infarction areas and biochemical estimations in brain. Locomotor activity and grip strength were significantly improved in guggulipid and aspirin pre-treated rats. Guggulipid and aspirin pre-treatment reduced the infarction areas as compared with middle cerebral occluded (MCAO) rats. An elevation of nitrite, thiobarbituric acid reactive substance (TBARS), acetylcholine esterase activity (AchE) and reduction in antioxidant enzymes like superoxide dismutase (SOD), glutathione (GSH) and catalase were observed following MCAO. Pre-treatment with guggulipid and aspirin caused a reduction in TBARS and nitrite levels, AchE, but elevated GSH level, SOD and catalase activities as compared with MCAO rats. The protective effects observed in this study were due to antioxidant, anti-inflammatory and anti-hyperlipidemic properties of guggulipid. The protective effect of guggulipid in cerebral ischemia, that it may have a role in reversing the symptoms and may offer significant neuroprotection in stroke.

JH/IASTAM2022/OP7

Multi-targeted therapeutics in Unani medicine with special reference to haemopoietic formulations

Md. Wasi Akhtar*

Department of Moalajat, School of Unani Medical Education and Research, Jamia Hamdard, New Delhi
***Corresponding author**: drmdwasiakhtar@jamiahamdard.ac.in

Many of the diseases are found to be developed due to multiple aetiologies, in these cases all the different aspects of aetiopathology need to be addressed to achieve maximum benefit. Formulations of traditional systems of medicine have multiple ingredients and the ingredients are so chosen by the scholars that they all in combination may counter most of the aetiologies, make the formulation more potent and minimize any adverse effect produced by the main/ other ingredient. In Unani system of medicine most of the formulations are used keeping in mind multi-targeted therapeutics. While treating anaemia it is not enough to supplement iron, but also need to check the causes of anaemia along with the management of adverse effects (constipation, bloating etc.) of iron supplementation.

Majoon Khabsul Hadeed improves liver function, stops gastro-intestinal bleeding, heals any gastro-intestinal ulceration, and removes intestinal worms besides supplementing iron. It is also a good laxative, thus avoids iron induced constipation and helps to expel the dead/ paralyzed intestinal worms. *Sharbat Faulad* (NFUM Vol. VI) is also used in anaemia, it reduces adverse and side effects produced by the presence of iron like bloating and constipation very well besides improving haemopoiesis. *Sharbat Maweez* improves the overall condition of an anaemic patient by its haemopoietic, hepatotonic, cardiotonic and laxative effects. *Damvi* (NFUM Vol. 6) is a non-sugar based iron containing Unani formulation for anaemia, it provides iron along with improving liver function and gut motility. Therefore, treating anaemia with Unani haemopoietic formulations are based on multi-targeted therapeutics.

JH/IASTAM2022/OP8

Biochemical and pharmacological evaluation of atenolol (100mg), on Saudi hypertensive patients

Moayad Mustafa Hejazi*

Department of Biochemistry, King Abdulaziz University, Jeddah, Kingdom of Saudi Arabia
***Corresponding author:** moayad.hejazi@yahoo.com

Among all causes of death and morbidity hypertension is one of the major reason across the globe. Drug resistance and inefficacy to control blood pressure is contributing factor to high level of morbidity. Biochemical and Pharmacological evaluation fixed dose atenolol (100mg), on the Saudi hypertensive patients. The study was carried out at King Fahad General Hospital in Jeddah, Saudi Arabia. All the data was retrieved from the medical files of the patients who were registered as out/indoor patients at cardiology department. The sample size for this study was taken as 119 patients and age was between 50-85 years of either sex. Information regarding age, gender, weight, height, medication used, blood pressure, electrolytes, vitamin-D, Immunoglobulin-M, immunoglobulin-G, glucose, HbA1C, creatinine, blood urea nitrogen and uric acid were monitored. 32.2% of the patients were overweight and 48.8% were obese. In addition, 82.6% of the patients showed a high systolic blood pressure (>130 mm Hg). The blood sugar level (Hb A1C) was higher (>7%) in about 38 % of the patients. Rest of the parameters were in normal limits. Atenolol is first line of therapy in treatment of hypertension. The fixed dose may not be good to use for overweight and obese patients. Furthermore, it was ineffective in controlling the systolic blood pressure with high level of Hb A1C. The antihypertensive, characteristics of atenolol need to be revalidated in large population study.

JH/IASTAM2022/OP9

Thymoquinone exerts inhibitory activities on breast cancer cell lines and protective effects against DMBA-induced breast cancer in female rats

Mohammed Kaleem

Dadasaheb Balpande College of Pharmacy Nagpur, Maharashtra
Corresponding author: kaleemmubin88@gmail.com

Breast cancer (BC) is the second common type of cancer and a leading cause of cancer-related deaths among women. BC is considered a multifactorial disease caused by the dysregulation of many genes, raising the need to find new drugs that function by targeting several signaling pathways. The antitumoral drug thymoquinone (TQ), found in the black seed oil, has multitargeting properties on several signalling pathways. This study evaluated the in vitro and in vivo antitumor activity of TQ on BC. Here we demonstrated that TQ inhibits the growth of breast cancer cell lines MCF7 and T47D in a dose dependent manner, and induces an increase in the percentage of apoptotic cells. TQ-induced cell proliferation inhibition and apoptosis induction was associated with the downregulation of several epigenetic markers including UHRF1 and DNMT1 and the upregulation of several pro-apoptotic genes. The in vivo antitumor activity of TQ was evaluated in 7,12-dimethylbenzanthracene (DMBA)-induced animal model of breast cancer. Thirty-four (34) female Wistar albino rats at the age 50 days were divided into three groups: female rats received solvent (corn oil) three times weekly (group I), rats received only a single dose of DMBA (65 mg/kg body weight) (group II) or a single dose of DMBA (65 mg/kg body weight) and next day they received TQ (50 mg/kg body weight) dissolved in corn oil three times weekly for 47 d (group III). In rats, TQ inhibited tumor growth and reduced tumor vascularization and the number of liver and lung metastases. While DMBA led to neoplasia and hyperplasia in breast tissues, the administration of TQ to rats improved histological alterations in breast tissues and reduced DMBA carcinogenicity in rates. Taken together, these results showed that TQ exerts protective effects on breast cancer risk and reduces the development of metastatic tumors in vivo through the inhibition of proliferation and the induction of apoptosis of tumor cells.

JH/IASTAM2022/OP10

Some biostatistical methods for pharmaceutical science research

Mohd. Vaseem Ismail

School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062
Correspondin author: vaseemismail2@gmail.com

A pharmaceutical science researcher may sometimes wonder "why statistical methods are so important in research?" Simple answer is that, statistical methods are used throughout a study that includes planning, designing, collecting data, analyzing and drawing meaningful interpretation and report the findings. Hence, it is important that a researcher knows the concepts of at least basic statistical methods used at various stages of a research study. This helps the researcher in the conduct of an appropriately well-designed study leading to valid and reliable results that can be generalized to the population. A well-designed study possesses fewer biases, which intern gives precise, valid and reliable results. There are many statistical methods and tests that are used at various stages of a research. In this communication, we discuss the overall importance of statistical considerations in pharmaceutical research with the main emphasis on estimating minimum sample size for different study objectives. I recommend that the teaching of biostatistics be intensified to students of Pharmaceutical sciences and allied courses, both at undergraduate and postgraduate levels. Further, investigators should consult biostatisticians at the design stages of their research work. Any article containing even the most elementary statistical procedure should be reviewed by a competent biostatistician. Finally, wherever possible editorial boards of medical journals should include a biostatistician as an associate editor. In this communication, we discuss the overall importance of statistical considerations in pharmaceutical research with the main emphasis on estimating minimum sample size for different study objectives.

JH/IASTAM2022/OP11

Polyphenols profiling and development of synergy based combination of AYUSH based medicinal plants for cognitive impairment

Monalisha Samal[1,3], S.H.Ansari[2], Sayeed Ahmad[1,2,3*]

[1]Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India

[2]Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India

[3]Centre of Excellence (CoE) in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi-110062, India
***Corresponding author:** 9891374647, sahmad_jh@yahoo.co.in

Herbs rich in polyphenols have a substantial ethnobotanical value and have been positively correlated to a lowered risk of various non-communicable diseases, including Alzheimer's disease (AD). Development of synergy based combination is a less explored approach to improve the cognitive impairment, hence the study. The main aim of the present study was profiling of polyphenols via HPTLC and UPLC-MS, and *in-vitro* testing for selection of best active plant extracts, and development of synergistic combination. On the basis of literature survey eight medicinal plants (P1, P2, P3, P4, P5, P6, P7 and P8) were selected. Aqueous, hydro-alcoholic and alcoholic extracts were prepared to quest the brain tonic potential of these plants. The polyphenolic metabolites present in samples were separated and identified via HPTLC and UPLC-MS fingerprinting. All the extracts were subjected to *in-vitro* acetylcholinesterase inhibitory activity and anti-oxidant activity to determine the two best active extracts, followed by development of a synergy based combination for neuro protective activity. Methanolic extracts of P2 and P4 were found to be highly active against *in-vitro* DPPH, reducing power and acetyl cholinesterase inhibitory activity. The active extracts were found to be enriched in total phenols and flavonoid content *in vitro*. The HPTLC and UPLC-MS chromatogram revealed the presence of many polyphenols in the tested active samples. Further, synergy based combination was developed from the active extracts for neuro protective activity. The novelty of the study remains in the identification and detection of polyphenolic compounds that aids in development of a synergistic combination responsible for the neuroprotective activity.

JH/IASTAM2022/OP12

Acute oral toxicity study of capric acid by OECD guideline 423 in rodents

Nikhila Shekhar[1], Ajit Kumar Thakur[1*]

Neuropharmacology Research Lab., School of Pharmaceutical Sciences, Delhi Pharmaceutical Sciences and Research University, New Delhi-110017
***Corresponding author:** 9935824795, ajit.thakur@dpsru.edu.in

Capric acid is a medium chain fatty acid present in goat milk, coconut oil and seed oils, and exerts beneficial effects on various neuropsychiatric disorders. However, thereis lack of scientific evidences that confirm its safety and toxicity profile. The aim of the present study was focused on acute oral toxicity study of capric acid as per OECD guideline 423. In this study, female albino Wistar rats (3 per step) were administered with a starting oral dose of 300 mg/kg and 2000 mg/kg respectively for a period of 14 days. They were observed for signs of toxicity specifically for first 4 hours, 24 hours and then consecutively up to next 14 days. Signs of lacrimation, salivation, piloerection, drowsiness, tremors, convulsions, diarrhea, and changes in fur, eyes and mucous membranes were noted. Periodic evaluation of weight, food/water intake and behavioral changes were also done on day 0, 7, and 14. Based on the observations, the oral dose of capric acid was found to be safe up to 2000 mg/kg, body weight in rats. There were no significant signs of toxicity, body weight/behavioral changes or mortality. The histopathological observations also ruled out any pathological changes in vital organs of animals that were treated with different doses of capric acid. Hence, the current study concluded that an acute oral dose of capric acid is non-toxic and safe up to 2000 mg/kg body weight and thus can be advocated to be considered as a therapeutic option in diseases.

JH/IASTAM2022/OP13

Development and evaluation of natural lipid based chemotherapy in Visceral Leishmaniasis

Noor Fatima[1]*, Mairaj A. Ansari[1], A. Selwapandian[2]

[1]Department of Biotechnology, School of Chemical & Life Sciences, Jamia Hamdard, New Delhi, 110062

[2]Department of Molecular Medicine, School of Interdisciplinary Sciences, Jamia Hamdard, New Delhi, 110062
Corresponding author: noor.fatima@jamiahamdard.ac.in

Leishmaniasis is a neglected disease and the current therapeutic arsenal for its treatment is seriously limited by high cost and toxicity. Nanostructure archeasomes loaded with amphotericin B was prepared from isolated lipid of halobacterium salinarum represent a promising approach due to high drug loading capacity, controlled drug release profiles and superior stability. Here, we explored the efficacy of a unique pH-sensitive amphotericin B-loaded archaeasomes in Leishmania donovani infection (in vitro and in vivo.) Total lipid isolated from halobacterium salinarum.Archeosomes with drug prepared by thin hydration method was characterised by dynamic light scattering and atomic force microscopic assays. The archeosomes showed nanomeric size of 87.84nm, pdi 0.39 and zeta potential(-19.1) the cytotoxicity of drug loaded archeasomes showed least toxicity to macrophage and also reduces the intracellular parasite viability. Further animal studies are in progress for the same.

JH/IASTAM2022/OP14

Phytochemical and pharmacological screening of methanolic silk extract of Resha-e-Makka*in vitro* and *in vivo*

Parakh Basist[1, 2,3], Sayeed Ahmad[1,3*]

[1]Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India-110062

[2]Department of Pharmacology, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India-110062

[3]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India-110062
***Corresponding author:** 9891374647, sahmad_jh@yahoo.co.in

Resha-e-Makka *(Zea mays)*, world's third leading cereal grain is an important traditional plant in the Unani system of Medicine due to its multiple pharmacological properties. However, there is no scientific validation and documentation on phytochemical screening of *Z. mays* silk as well as nephroprotective potential *in vivo*. The study aims to evaluate the preliminary phytochemical, antioxidant and HPTLC and LC-MS analysis and *in vivo* nephroprotective activity of methanolic silk extract of *Z. mays*. Antioxidant activity was carried out by *in vitro* assays and chemical fingerprinting were carried out by HPTLC and LC-MS. Further, *in vivo* activity on Wistar rat were performed to evaluate the nephroprotective potential. *Z. mays* exhibits significant antioxidant potential as well as enriched with high phenolic and flavonoid content. Further, HPTLC and LC-MS reveals several numerous compounds belong to different class of polyphenols. Further, *in vivo* studies conducted on Wistar rats induced nephrotoxicity by chemical showed nephroprotective activity through anti-oxidant, -inflammatory, and –apoptosis. In conclusion, the result indicates that the methanolic silk extract of *Z. mays* possessed high antioxidant effects *in vitro* and potent polyphenoic compounds that may prevent several diseases and could be potentially utilized in food and pharmaceutical products. Also, extract showed nephroprotective potential through anti-oxidant, -inflammatory, and –apoptosis effects.

JH/IASTAM2022/OP15

Effects of an ethanolic extract of *Vaccaria pyramidata* root on the liver injury in rats

Preeti Biswas

Department of Pharmacology, Shri Venkateshwara University, Gajraula, U.P, India
Corresponding author: preetibiswas15@gmail.com, 9458655511

Liver disorders are a major problem all over the world. Unfortunately, conventional or synthetic medications used to treat liver disease are often ineffective and have substantial adverse effects. *Vaccaria pyramidata* is a rhizomatous beardless perennial plant which is used as anthelmintic, appetizer, depurative, diuretic, vermifuge, liver complaints and oedema traditionally. The purpose of this study was to determine if an ethanolicextract of vaccaria root acted like an anti-oxidant and hepatoprotective agent found among Wistar albino rats following CCl4-induced liver injury. Hepatotoxicity from CCl4 can be greatly reduced with pretreatment with ethanolic extract of vaccaria, also known as Silymarin. Test indicates a significant reduction in elevated serum enzyme levels like “SGOT, SGPT and alkaline phosphatase” in comparison to the extract of animals that are treated to the animals that are still toxic. There was a big difference in stages of significant direct bilirubin in the group that took silymarin, ethanolic extract before. Toxicant-treated rats reduced their triglyceride levels more than “the rats treated with Silymarin and ethanolic extract”. The ethanolic extract of vaccaria root exhibited antioxidant activity when subjected to the tests like DPPH, ABTS scavenging activity, total flavanoid content” etc. Thus, the investigation in reference confirmed that ethanolic extract of *Vaccaria pyramidata* root had potential antioxidant and hepatoprotective activity.

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Comparison of effects of type-2 Diabetes Mellitus on mental health among middle aged males and females: A cross-sectional observational study

Rabia Aziz*, Sohrab A. Khan

Department of Physiotherapy, Jamia Hamdard, New Delhi, India
***Corresponding author:** rabiaaziz2106@gmail.com

Anxiety, depression and loss of memory are common and often unidentified although it can cause severe effect on quality of life in a longer run. Diabetes is a chronic non-communicable disease which has a severe effect on mental health. Early detection and management shows better treatment outcomes. The study was a cross-sectional observational design. A sample of 40 subjects was assigned into two groups; Group-1 (n=20, females with Type-2 Diabetes Mellitus), Group-2 (20 males with Type-2 Diabetes Mellitus). All the groups were tested for anxiety (GAD-7), depression (PHQ-9) and memory (PGI-memory scale) and scored accordingly. The mean score of GAD-7 (anxiety) for group-1 was 14.18(±4.23) and group-2 was 11.3(±4.90); the mean scores for PHQ-9 (depression) for group-1 was 12.18(±5.51) and group-2 was 10.9(±4.98) and mean scores for PGIMS for group-1 was 67.18(±15.42) and group-2 was 73.95(±14.27). Direct relationship between increased glycemic level and mental health is not evident. The results of the study suggested that diabetes effects mental health of both male and female subjects and causes accelerated and severe effects on mental health of females. Patients with diabetes mellitus should follow the treatment in a biopsychosocial approach from the onset of the disease so as to minimize co morbidities especially in females.

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Investigating the interplay between stress responsive transcription factors,HIF-1 α and NRF2, in cancer and their modulation by spice-derived phytochemical.

Rebanta Roy

Dept. of Zoology, West Bengal State University Intern, Zoological Society of Kolkata
Corresponding author: rebantaroy.in@gmail.com

Hypoxia and reactive oxygen species (ROS) are two established components in the tumor microenvironment which are often reported as strong activators of cancer progression and correlated with poor outcome for patient. Therefore, a molecular insight into the cross talk between hypoxia and oxidative stress would be helpful to develop effective therapeutic strategy that would target and exploit these unique features of the tumor microenvironment. In this study we have focused majorly on finding out a crosstalk between oxidative stress derived transcription factor Nrf-2 and hypoxia derived HIF1 alpha by introducing variable concentrations of stress inducing chemicals, determined using cellular cytotoxicity assays. In most cases these two transcription factors have been found to act as a "two-edged sword". We also have examined the effect of phytochemical linalool in modulating this crosstalk. In conclusion, we have found out that oxidative stress and hypoxia both influence the expression of both Nrf-2 (classically getting expressed under oxidative stress and non classically under hypoxia) and HIF-1 alpha (classically getting stabilized under hypoxia and non classically under oxidative stress). Further we found out two sub- lethal concentrations of a phytochemical linalool which has been found to reduce the cancer cell migration.

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Diuretic activity of the aqueous roots extract of *Leptadenia hastata* (Asclepiadaceae) in rats

Ritu Rani*, Hema Chaudhary

Faculty of Pharmaceutical sciences, PDM University, Bahadurgarh
***Corresponding author:** ritupoonia98122@gmail.com

Leptadenia hastata plant is used in African traditional medicine to treat arterial hypertension. We evaluated the acute and sub-acute diuretic activities of aqueous extract of *L. hastata* roots in rats. Male adult rats were administered with *L. hastata* roots extract acutely (24 h) and sub-acutely (7 days) at doses 150, 200 and 250 mg/kg (per os). To evaluate the acute diuretic activity, samples of tail vein blood were collected 24h after treatment and urine was collected every 3h. Levels of Na ions, K ions, and Cl ions, urea, and creatinine were also measured. Natriuretic and saluretic were determined. The urine collected for 7 days was processed similarly to evaluate sub-acute diuretic activity. The extract induced significant increases in urine volume (54.93%, 64.47%, and 77.69% compared to vehicle group for doses 150, 200, and 250 mg/kg, respectively), and urine Na ions (126.51%, 136.83%, and 133.67%, respectively), Cl ions and in a lesser extent, K ions levels 24h after treatment. Creatinine and urea levels increased in urine whereas blood creatinine and urea levels were decreased. Saluretic and natriuretic were also determine. These effects were maintained along 7 days of treatment, and were comparable with two references drugs effects (furosemide and amiloride hydrochlorothiazide). Altogether, our results suggest that aqueous extract of *L. hastata* roots has strong acute and sub-acute diuretic activities in rats, which warrant further studies considering the potential for unravelling a novel class of diuretic drugs.

JH/IASTAM2022/OP19

Qualitative and quantitative estimation of bioactive constituents in *Rubia cordifolia* L. roots and their marketed products using HPTLC densitometric analysis

Rizwan Ahmad[1,2], Suneela Dhaneshwar[1], Sadath Ali[3], Sayeed Ahmad[4]

[1]Amity Institute of Pharmacy, Amity University Uttar Pradesh, Lucknow, U.P, India

[2]Azad Institute of Pharmacy and Research, Lucknow, U.P, India

[3]M.A.M College of Pharmacy, Kalaburagi (Gulbarga), Karnataka, India

[4]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India
Corresponding author: 8317005787, rizwanheshampharm13@gmail.com

Since history, medicinal plants and their derived products are playing an important role in mitigating several disorders, traditionally. Quality control assessment is of critical need for assurance of quality, safety and efficacy of medicinal plants and their products. *Rubia cordifolia* L. (*R. cordifolia*) is a traditional Indian medicinal plant used for the treatment of several diseases. Due to the lack of quality standardization of *R. cordifolia* and its derived commercial herbal products, the study is aimed at qualitative and quantitative estimation of some marker compounds in *R. cordifolia* and its commercially derived products. A high-performance thin layer chromatographic (HPTLC) method was developed and validated as per ICH guidelines for simultaneous determination of purpurin and alizarin, major anthraquinone constituents in *Rubia cordifolia* L. roots and their commercial products. Methanolic extract was prepared and HPTLC densitometric analysis was performed for simultaneous estimation of purpurin and alizarin in *R. cordifolia* and its commercial products. The separation was performed on a silica Gel $_{60}$ F $_{254}$ HPTLC plate using Toluene: Ethyl acetate: Glacial acetic acid (6:3.5:0.5, v/v/v) as the development system. The determination was carried out using densitometric absorbance–reflection mode at 254 nm and 366 nm for purpurin and alizarin. Validation of the analytical method for purpurin and alizarin promoted acceptable parameters. Good linearity in the range of 100-2000 ng/ band was obtained, while intra-day and inter-day precision were shown to be precise with Relative standard deviation (RSD) of less than 2%. The average percentage recoveries of purpurin and alizarin were 99.88 % and 104.27 %, suggesting acceptable accuracy. The content of purpurin and alizarin in *R. cordifolia* plant extract analyzed by the validated HPTLC method was found as 17.960 ± 0.658, 34.645 ±1.153µg/mg, Bharat Ayurvedic Aushdhalaya ™ was found to contain 21.741± 0.746 and 6.824 ± 0.485 µg/mg of purpurin and alizarin respectively while

Vitagreen Ayurveda ™ was found to contain 18.289 ± 1.014 and 3.031 ± 0.234 µg/mg of purpurin and alizarin respectively. The outcome of the study revealed that the developed HPTLC method was found linear, accurate, and precise and economical for routine analysis for quantifying and resolving of purpurin and alizarin contents in *Rubia cordifolia* L. roots raw materials and its commercial products.

JH/IASTAM2022/OP20

Cardioprotective effect of isolated Swerchirin from Chiraita against the Isoproterenol-induced Myocardial infarction in *Wistar albino* rats

Rustam Ekbbal[1], Sayeed Ahmad[2], Syed Ehtaishamul Haque[1]*
[1]Department of Pharmacology, School of Pharmaceutical Education and Research (SPER), Jamia Hamdard, New Delhi, India

[2]Bioactive Natural Product Laboratory, Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Department of Pharmacognosy and Phytochemistry, SPER, Jamia Hamdard, New Delhi, India
***Corresponding author:** sehaq@jamiahamdard.ac.in, 9999464404

Myocardial infarction (MI) is one of the emerging healthcare issues arising worldwide, exponentially. Oxidative stress, myocardial inflammation and damage to the cardiac membrane are the major causative attributes of MI. Isoproterenol (ISO) induced MI is a well-established and accepted model to estimate innovative cardioprotective agents, as it exhibits morphological and biochemical aberrations, significantly. In the present study, we explored the cardioprotective effect of isolated Swerchirin from Chiraita against the Isoproterenol-induced Myocardial infarction in *Wistar albino* rats. Swerchirin (SW) was isolated from Chiraita and characterized using advanced analytical techniques. The *in-vitro* DPPH and NO scavenging activity were performed to explore the antioxidant capacity of SW. *In-silico* study was performed to determine the binding affinity of swerchirin with antioxidant enzymes (SOD and CAT). *In-vivo* cardioprotective effect of SW was determined against ISO-induced MI in Wistar albino rats via estimation of hemodynamics, oxidative, and biochemical markers followed by histopathological analysis.

The *in-vitro* studies showed the significant antioxidant potential of swerchirin whereas the *in-silico* study revealed its effective binding into the catalytic pocket domain of SOD and CAT. The *in-vivo* study showed a significantly ameliorative effect on hemodynamics, anti-oxidative enzymes, and biochemical markers. Further, swerchirin also significantly reversed histopathological aberrations in a dose-dependent manner. The study concludes that SW exhibited a significant cardioprotective effect against ISO-induced myocardial infarction.

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Potential Anti-*Candida* activity of Limonene

Saiema Ahmedi[1], Pradeep Pant[2], Nafis Raj[1], Nikhat Manzoor[1]*

[1]Department of Biosciences, Jamia Millia Islamia, Delhi, India-110025

[2]Department of Chemistry, Indian Institute of Technology, Delhi, India, 110016
***Corresponding author**: nmanzoor@jmi.ac.in, 8750522156

Candidiasis is most concern illness worldwide mainly affecting immunocompromised patients. Increase in multi-drug resistance and side-effects of existing drugs, the development of novel antifungals become more demanding. The present study evaluates the efficacy of limonene (citrus based monoterpene) as an antifungal against *C. albicans* major virulence factors. *In-vitro* and *in-silico* studies were performed including haemolysis assay, antifungal susceptibility, secretion of hydrolytic enzymes, morphological transition, adhesion and biofilm formation. Computer based studies using docking tools followed by MD simulations with some major virulence related antifungal targets- Als3, Bcr1, Plb1, Sap2 and Tec1. At MIC of 300 µg/mL, it causes only 1% red blood cell lysis. Limonene significantly reduced adhesion to buccal epithelial cells and secreted hydrolytic enzymes mainly proteinases and phospholipases by 73% and 53% respectively. Treatment with natural monoterpene significantly inhibits morphological switching in *C. albicans* which was monitored microscopically. Biofilm formation results depicts that the effect observed was concentration dependent. Docking and MD simulation studies shows stable interactions with limonene and selected target proteins except Bcr1. Limonene has potent antifungal efficacy with lesser toxicity inhibits major virulence factors in *C. albicans.* Present work needs to be corroborated with molecular and *in- vivo* studies.

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Tracing phytochemical variability amongst species of Pippali using modern chromatographic techniques

Sakshee Sharma*, Laxman Sawant, Pankaj Prasad Raturi

Dabur India ltd, Plot No. 22, Site IV, Sahibabad Industrial area, Ghaziabad, 201010
***Corresponding author**: 9015815341, sakshee.sharma@dabur.com

Piperaceae is a huge family consisting of more than eight genera and 3000 different species. They are widely available in Tropical and sub-tropical regions worldwide. Amongst all eight genera, Piper considered as the most important genera in different traditional system of medicine, consisting more than 700 plant species worldwide. The specified species as "Pippali" in Pharmacopoeia is the dried fruits of *Piper longum* but in trade, mixture of different species has been observed. Replacement of the species may directly impact different formulations. An attempt has been made to standardize different species chemically via this study. Species specific phyto-constituents has been identified which will intern help in identification of the proper specie in future. Authentic samples of different species has been standardized using HPLC-PDA against "Piperine" but observed several other prominent peaks too. Other peaks were confirmed by LC-MS using RP Inertsil column, eluted with acetonitrile and water as mobile phase at 264 nm wavelength. Different Species specific compounds were identified and quantified. Piperine content varies from 0.04-5% in different piper species collected along with "Benzodiazole" compound identified by using LC-MS, which is specific to fruits of Piper longum. So, can be used as a decisive factor for identification of species chemically. Apart from commonly known compound i.e. Piperine for different Piper species, two different Benzodiazole compounds has been identified and quantified which will play important role in standardization of different piper species with at most precision and accuracy.

JH/IASTAM2022/OP23

Rejuvenation therapies for skin in Unani medicine

Seema Rani*

Department of Ilmul Saidla, School of Unani Medical Education and Research, Jamia Hamdard, New Delhi
***Corresponding author**: seemaranihusain@jamiahamdard.ac.in

Since prehistoric era, both males and females are using various forms of beauty care products to look presentable, elegant, conspicuous and sophisticated. Apart from this vary fact, females are still considered to be more inclined towards use of these preparations. But with the advancement of science and technologyawareness of people towards side effects of modern cosmetics has increased. Hence, people tend to avoid these products and are now looking towards other alternative systems of medicine for skin rejuvenation and beautification. Amongst all the alternative medicine, Unani system of medicine is one which is hub of single and compound formulations for internal and external application. Unani drugs have been prescribed by eminent Unani physicians for the skin rejuvenation and skin health. In this paper we will discuss different herbal, mineral and animal origin drugs with their chemical constituents, actions and uses with emphasis on skin rejuvenation. Apart from these many compound formulations along with role of diet, skin massages and exercises that play an important role in face and skin glow will also be discussed in the paper.

JH/IASTAM2022/OP24

Extraction, isolation, characterization and optimization of bio-active molecules from dry fruit extract of *Terminalia chebula*

Sharmila Dusi*, J.Saminathan

Delhi Pharmaceutical sciences and Research University, New Delhi
***Corresponding author**: 7013540680, sharmila.dusi@gmail.com

Medicinal herbs and herbal medicines contain a variety of bioactive substances. The analytical approaches, such as the extraction, isolation, and characterization of active components of bioactive molecules from *Terminalia chebula* fruits, are the main subject of this research. The study focuses on the typical issues and significant difficulties encountered when extracting, isolating, and characterizing the active components of bioactive substances. The aim of this research is to investigate the presence of bioactive metabolites in the crude methanolic dry fruit extract of TC. To select the advanced Techniques and methodologies for extraction, isolation, and characterization of bioactive metabolites from dry fruit of TC, as potential lead compounds in the drug discovery process. Through microwave-assisted extraction (MAE), the methanol extracts were subjected to conventional methods for phytochemical analysis and conventional column chromatography. The extract was prepared and subjected to GC-MS for spectral analysis. The obtained spectrum is matched with WILEY libraries and NIST. The peak maximum absorbance and wavelength range is identified by using a Perkin-Elmer Lambda 30 UV/VIS spectrophotometer, and the UV region (200-400 nm) of each active extract was determined. A sufficient amount of TC crude powder and column fraction of TC-F2 was placed on the diamond crystal sample stage of the BRUKER 2.0 ATR-FTIR spectrophotometer. The sample was scanned in the region of 4000 cm-1 to 550cm-1, with a resolution of 4 cm-1, using 24 scans per analyte. The TC-F2 fraction was introduced into 1HNMR and 13CNMR for structural elucidation using DMSO-D6 as solvent at 600MHz. In this research, the preliminary phytochemical studies revealed the presence of anthraquinones, flavonoids, alkaloids, steroids, terpenoids, glycosides, tannins, phenols, and saponins were present. Furthermore, the extract obtained using microwave-assisted extraction (MAE) contained a higher concentration of active secondary metabolites. Chromatographic column separation produced 3 major fractions namely TC-F1, TC-F2, and TC-F3. The GC-MS analysis revealed of 13 active compounds were identified in methanolic extract and run time of major compound is 17.38. In UV data, the absorbance maxima of 218 nm and 256 nm confirmed the presence of the carbonyl compound. The extract was subjected to conventional column chromatography separations and a significant major fraction of TC-F2 was subjected to ATR FTIR and NMR. The result of ATR-FTIR analysis confirmed the presence of absorptions bands at 3700-3584cm-1, 1760-1690cm-1, and 2950-2850cm-1 corresponding to the

OH- (Hydroxyl), C=O (Carbonyl), (C-H) Alkyl functional groups. The proton NMR exhibited δ 2.462 ppm as -COOH, δ 1.1ppm as CH2 proton, and δ 0.75 ppm as CH3 proton. 13C NMR indicated 167 as carbonyl carboxylic acid. The purity of the isolated column fraction was checked by TLC and showed RF values of 0.78. Future perspective is to conduct docking studies to the same molecule obtained, to know the pharmacological potential. All the obtained data from the GC-MS, ATR-FTIR, 1H NMR, and 13C NMR analyses of the present investigation reveal the active compound of predicted structure as octadecenoic acid. This compound can be utilized as a potent biomolecule for Laxative activity.

JH/IASTAM2022/OP25

Computational tools to open vistas on the novel phytoconstituents of Cannabis and regulatory aspects of Cannabinoid receptor

Shruti Mathur[1,2], Asif Ali[3], Daman Saluja[1,4], Rameshwar Bamezai[1], Suman Kundu[1,2,5,*]

[1]Institute of Eminence, University of Delhi, New Delhi, INDIA

[2]Department of Biochemistry, University of Delhi, New Delhi, INDIA

[3]CSIR-Central Drug Research Institute (CDRI), Medicinal & Process Chemistry Division, Lucknow, INDIA

[4]Ambedkar Centre for Biomedical Research, University Enclave, New-Delhi, INDIA

[5]BITS Pilani, K.K.Birla Goa Campus, Goa, INDIA
***Corresponding author**: 9899007460, suman.kundu@south.du.ac.in

Cannabinoids (tetrahydrocannabinol, cannabidiol and cannabinol) primarily act *via* cannabinoid receptors (CB1) to exert analgesia, but their abuse potential continues to limit their acceptance. The CB1 are G-protein coupled receptor (GPCR), the activity of which is modulated by the Cannabinoid receptor interacting protein (CRIP1a). The CRIP1a may play a role in altering the selectivity for Gαi subtype activation, although the exact molecular mechanism remains unclear. To virtually screen CB1 receptor against two cannabinoids from Cannabis (Cannabispiran and Cannabis glycosides) and to analyse *in-silico* interaction of CRIP1a towards CB1 receptor. Virtual screening studies are performed in Autodock Vina, Pyrx and various web-based GPCR servers, using the cryo-EM structure of CB1 (PDB ID: 6N4B) as a model for the docking procedure. For compounds, OpenBabel 3.2.1 was used to generate 3D and PDBQT format of the ligands. MD simulation studies are done on GROMACS 5.1, installed at the IIT-Delhi Supercomputing facility, SCFBio. The results of *in*-silico screening of the naturally occurring unique compounds of Cannabis, against CB1 receptor to determine the best in class compounds are presented. It is likely to rationalize future studies on the *in-vitro* and *in-vivo* evaluation of these compounds towards developing non-Cannabinoid compounds, as an alternative to reduced dependence like properties. MD simulation studies between the CB1 & CRIP1a may establish probable mechanism of regulation of CB1 receptor.

JH/IASTAM2022/OP26

Role of fungal cordycepin as 3'deoxy-adenosine in treating clinical and sub-clinical illnesses

Srishti Johri[1*], A. Selvapandiyan[2]

[1]Indian institute of Science, CV Raman road, Bengaluru, 560012

[2]Department of Molecular Medicine, Jamia Hamdard, New Delhi 110062
***Corresponding author:** srishtijohri97@gmail.com

Cordyceps militaris is an entomopathogenic fungus that has historic medical properties and regarded as a natural source of cordycepin. Its properties have been recorded in ancient Chinese and Korean medical literature, for over 200 years. The fungus has been consumed for the treatment of various clinical and sub-clinical illnesses. However, its true clinical potential is still being researched. The primary active compound present in the fungus is Cordycepin. Chemically, it is known as 3' deoxyadenosine. It is structurally similar to Adenosine, which is a nucleoside. Research also indicates that Cordycepin can have an impact in the treatment of cancers, including renal, ovarian, lung cancer, etc. due to its apoptotic action on cancer cells and believed to be effective against different types of viral species. Cordycepin has also been evident to develop a therapeutic effect against chemoresistance developed by cancer stem cells (CSCs), acts as a co-catalyst in chemotherapy. Use of Cordycepin has also been witnessed in the treatment of diabetes, high blood cholesterol, LPS induced acute lung injury and many others. Industrially, the price of Cordyceps militaris has been increasing for the past decades and now it is one of the most expensive fungi in the world. The compound can also be chemically synthesized; however, it is still 'farmed' in special 'farms'. Cordycepin undoubtedly has an immense potential to stand a great place in the future of pharmacology and could be a mass consumed health product, akin to Green Tea. Here I will bring out some own experience in its cultivation.

JH/IASTAM2022/OP27

In vitro anti-inflammatory and antioxidant activity of acetone extract of leaves of *Maytenus emarginata* (Willd.) Ding Hou

Supriya Sharma*, Nandini Pandey, Mahaveer Dhobi

Delhi Pharmaceutical Sciences and Research University, New Delhi
***Corresponding author:** 8556865919, supriyasharma5858@gmail.com

Inflammation causes discomfort, suffering and lower productivity of the victims. Synthetic anti-inflammatory drugs are not readily available and have adverse side effects. Alternative herbal remedies contain bioactive substances that are both safer and effective at treating inflammation. *Maytenus emarginata* (Willd.) Ding Hou (Celastraceae), is an evergreen tree species of Indian Thar Desert and neighbouring Aravallies. The present study evaluated *Maytenus emarginata* (Willd.) Ding Hou leaf extract for its *in vitro* anti-inflammatory and antioxidant activity. Leaves of *Maytenus emarginta* were extracted by Soxhlet apparatus using acetone as solvent. Total flavonoid content was determined by aluminium chloride colorimetric assay. Total phenolic content was determined with Folin-Ciocalteu using microplate reader. Antioxidant activity was determined using 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay. *In vitro* anti-inflammatory activity was determined by using albumin denaturation inhibition method and HRBC membrane stabilization method. Phytochemical screening of acetone extract of leaves showed the presence of alkaloids, flavonoids and terpenoids. The acetone extract of leaves showed significantly high total phenolic and total flavonoid content. The crude extract displayed DPPH free radical scavenging activity with IC_{50} value of 234.675 µg/mL. *In vitro* anti-inflammatory activity was determined by using albumin denaturation inhibition method and HRBC membrane stabilization method. In protein denaturation method IC_{50} value of acetone extract was found to be 106.199 µg/mL. In HRBC membrane stabilization method IC_{50} value of acetone extract was found to be 329.296 µg/mL. The presence of high total flavonoid and phenolic content in the acetone extract of leaves of *Maytenus emarginata* might contribute towards the antioxidant and anti-inflammatory activity of the plant. However, more *in vivo* studies are required in order to confirm this.

JH/IASTAM2022/OP28

Identifying multiple molecular targets of an anti-infective polyherbal formulation (Enteropan®) against a multidrug resistant *Pseudomonas aeruginosa*

Sweety Parmar[1], Nidhi Thakkar[1], Hanmanthrao Palep[2], Vijay Kothari[1*]

[1]Institute of Science, Nirma University, Ahmedabad, Gujarat, 382481, India.

[2]Dr. Palep's Medical Research Foundation, Mumbai, India
***Corresponding author:** vijay.kothari@nirmauni.ac.in

Antimicrobial Resistance (AMR) has been recognized as a 'slow pandemic' of serious global concern. Among the bacterial pathogens, antibiotic-resistant strains of *Pseudomonas aeruginosa* are responsible for considerable morbidity and mortality, and novel anti-pathogenic approaches against this bacterium are urgently required. The proposed study aimed to elucidate the molecular mechanisms associated with anti-pathogenic activity of Enteropan®. Enteropan® formulation was tested for its *in vitro* effect on bacterial growth and quorum sensing against *P. aeruginosa* through broth dilution assay. *In vivo* anti-infective efficacy was evaluated using *Caenorhabditis elegans* as a model host. Whole transcriptome analysis of Enteropan®-treated pathogen was done to gain insight into its molecular mechanism of action. Enteropan® formulation could alter quorum sensing-regulated pigment (pyoverdine and pyocyanin) production, and antibiotic susceptibility in *P. aeruginosa*. Enteropan® (600 µg/ml) pre-treated *P. aeruginosa* could kill 70% ± 6.32 lesser worms than control bacterial culture. Whole transcriptome study revealed that approximately 17% of the *P. aeruginosa* genome was differentially expressed (fold change ≥ 2, p value ≤ 0.001) under the influence of Enteropan®. Enteropan® was shown to exert its anti-pathogenic potential against *P. aeruginosa* by influencing multiple targets simultaneously. Major targets appear to be metal homeostasis, stress-response machinery, and quorum sensing.

JH/IASTAM2022/OP29

Genome stabilizing action of *Piper longum* against cyclophosphamide-induced genotoxicity in human peripheral blood lymphocytes and rodent model

Vaishali Yadav[1], Anuja Krishnan[2], Sultan Zahiruddin[3], Sayeed Ahmad[3], Divya Vohora[1*]

[1]Neurobehavioral Pharmacology Laboratory, Department of Pharmacology, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi

[2]Department of Molecular Medicine, School of Interdisciplinary Science and Technology, Jamia Hamdard, New Delhi 110062, India

[3]Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India.
***Corresponding author**: dvohra@jamiahamdard.ac.in, 9811477917

Identification of genoprotectants is a promising strategy for improving human health. *Piper longum* has drawn scientific attention because of its diverse biological effects and traditional utilization. The present study aimed to evaluate the genome stabilizing potential of *Piper longum* extract against cyclophosphamide-induced genotoxicity. The genoprotective action of extract was initially screened with plasmid pBluescriptSK(-) DNA. Extract and various fractions were screened against cyclophosphamide-induced genotoxicity in human peripheral blood lymphocytes. The genome stabilizing action of extract and potent (hexane) fraction was further confirmed in rats by evaluating mammalian erythrocyte micronucleus test, DNA fragmentation, oxidative stress markers, 8-hydroxy-2-dexyguanosine, γH2AX and histopathological lesions in liver and hippocampus. Further, extract was quantified and characterized by HPTLC, UPLC-MS & GC-MS. *Piper longum* ethanol extract revealed protection of plasmid pBluescriptSK(-) DNA against H_2O_2 induced strand breaks. In human lymphocytes, extract and hexane fraction showed reduction in micronucleus formation ($p<0.001$) and chromosomal aberrations ($p<0.01$) against cyclophosphamide. Further, extract and fraction, when administered to rats at 200mg/kg for 28 days, restored cyclophosphamide-induced genomic instability by reducing micronucleus formation, DNA fragmentation, restoring redox homeostasis, decreasing 8-OHdG, a marker of oxidative DNA damage, and reducing γH2AX, a DNA double strand break marker, as well as, preserving liver and hippocampus against histopathological lesions. Piperine and piperlongumine are the major alkaloids quantified in ethanol extract and hexane fraction of *Piper longum*. Our investigation confirms the genoprotective action of *Piper longum* mediated by diminishing the genomic lesions formation and DNA damage response pathways.

JH/IASTAM2022/OP30

Anti-mycobacterial activity and phyto-synergy: An approach against *jaraseem-e-laban* (dairy-borne pathogen)

Varsha Srivastava[1,2], Manthena Navabharath[3], Saurabh Gupta[3], Shoor Vir Singh[3], Sayeed Ahmad[1,2*]

[1]Bioactive Natural Product Laboratory, Jamia Hamdard, New Delhi, Delhi, India

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, India

[3]Department of Biotechnology, GLA University, Mathura, Uttar Pradesh, India
***Corresponding author**: 9891374647, sahmad_jh@yahoo.co.in

Hyphenation of synergy with herbals has gained popularity in recent years. The therapeutic value of synergistic interactions has been recognized since ancient times, and many different cultural healing systems continue to rely on this notion in the hope of improving efficacy through combination therapy. *Mycobacterium avium* subspecies *paratuberculosis* (MAP) infection has become endemic in domestic animals. It causes chronic diarrhea, weight loss, etc while being a possible cause of Crohn's disease (CD) like inflammatory disorders in human beings as well when transmitted through milk products (resistant of pasteurization). The selected plants have been reported as anti-inflammatory, immunomodulatory and are used against worm infestation in Unani System of medicine. The major aim of the conducted study was to determine the best active anti-MAP extracts and to develop a synergistic combination. The prepared bioactive extracts were authenticated using phytochemical reference standards. The extracts were qualitatively and quantitatively analyzed using HPTLC. Further, *in vitro* REMA assay was performed to determine the antimycobacterial potential of the selected bioactive extracts against *Mycobacterium avium* subspecies *paratuberculosis* to combat MAP associated autoimmune disorders such as Crohn's disease. Based on the obtained results, two best active extracts were selected and synergy was established using the concept of fractional inhibitory combination index (FICI). The developed synergistic combination can be a ray of hope for development of an efficient anti-MAP formulation thereby combating various MAP associated autoimmune disorders in animals such as JD and CD like inflammatory bowel disorders in human beings.

JH/IASTAM2022/OP31

Understanding and management cervical spondylosis and radiculopthy in Unani system of medicine with special reference to Hijamah-bil-Shart (Wet Cupping)

Rabia Khan

Jamia Hamdard, New Delhi

Corresponding author: rabikhan.rk1195@gmail.com

Aging plays a major role in the onset of cervical spondylosis and radiculopathy. Several acute and chronic symptoms start with neck pain and may lead to cervical radiculopathy. Eventually, the cascade of disc degeneration and formation of osteophytes and spurs causes desiccation of the intervertebral disc resulting in height loss and worsens the condition. In the Unani system of medicine, Waja-al-unq (Neck pain) closely resembles cervical spondylosis that has been explained depending upon severity and etiology. Various oral Pharmacological agents like Habbe Suranjaan, Habb-e-Asgand, and regimens like Fasd (Venesection), Hijamat-bil-shart (Wet cupping), Hijamat-bila-shart (Dry cupping), Irsal-i-Alaq (Leech therapy), Dalk (Massage), Takmeed (Fomentation), and Natool (Irrigation), etc. play an important role in the management of disease. Hjamah is the most known and comparatively more effective mode of treatment in the Unani system of medicine for the management of Waja-ul-Mafasil. It enhances blood circulation, removes stasis and morbid material, and reduces inflammatory markers from the site of the pain.

JH/IASTAM2022/OP32

Genetic diversity and population structure of an endangered Medicinal plant- *Aconitum heterophyllum* Wall. ex Royle

Amandeep Kumar

Dabur Research and Development Centre, Dabur India Limited, 22, Site-IV, Sahibabad, Ghaziabad-201010 (UP)
Corresponding author: amandeep.kumar@dabur.com

Aconitum heterophyllum commonly known as Atees, is a medicinal plant from north-western Himalayan region used in Ayurvedic system of medicine. The medicinal properties of the herb is attributed to the alkaloids found in its tuberous roots. Use of roots results in its unsustainable collection from the wild and as a result the species is reported to be critically endangered. This necessitates assessment of Genetic diversity as genetic erosion would result in higher extinction rate of plant populations. Genetic diversity and population structure was assessed in 36 accessions of *A. heterophyllum* representing 8 populations, using microsatellite markers. The microsatellite markers were characterized by assessing transferability and by using 5'-anchored primers with the targeted repeat motifs. A total of 55 allele with an average of 40% of polymorphic loci were observed using 14 primers. Results indicated low genetic diversity (Shannon's information index, I=0.246; and heterozygosity, uHe=0.194). The analysis of molecular variance indicated higher variation among the populations (92%) and very low variation of 8% within the population. High genetic differentiation was reported (Fst=0.490) with low gene flow (Nm=0.932). Population structure analysis reported two (K=2) populations which were dependent upon the distant geographical locations (Uttarakhand and Himachal Pradesh population). The cluster analysis confirmed the observed population structure. Overall, the study indicated that the decline in population of the species can be due to narrow genetic diversity, high genetic differentiation and low gene flow resulting from fragmentation of population due to overexploitation.

ABSTRACT (Poster)

JH/IASTAM2022/PP01

Evaluation of the potential effect of *Murraya koenigii* on experimental animals

Anjul Rathi*, Lalit Parihar

R.V. Northland Institute, G.B. Nagar Dadri
Corresponding author: anjulr21@gmail.com

The male rats were divided into 5 groups containing six animals in each group and bi lateral orchiectomy was used as a model for inducing arthritis in rat. Methanolic extract of murraya koenigii leaves. The extract was orally administered at the dose of 200-400mg/kg of body weight diclofenac sodium and vehicle for 15 days. Bi lateral orchiectomy model, The result of treatment were evaluated by Paw volume and body weight and estimation of GSH used for recognition of oxidative stress, SGOT and SGPT test for study the liver profile. ORX-MEMKL protected against the increased expression of matrix metalloproteinase (MMP)-3 and MMP-13 and reduced the production of inflammatory markers such as TNF-α and IL-1β, and significantly decreased the paw volume and GSH level fall with MEMKL treatment. It also decreases the SGOT and SGPT levels which are elevated due to osteoarthritis. MEMKL400mg/kg more effective than 200mg/kg the results are nearly related as compare to diclofenac. The present research suggests that methanolic extract of murraya koenigii could be effective alternative therapeutics for males over 50 who lack testosterone in preventing osteoarthritis.

JH/IASTAM2022/PP02

Experimental studies on the anti-stress effect of Majoon Brahmi and its optimization preparation in acute stress rat models

Aafreen Afzal[1], M.A Jafri[1]*, Shahid S. Chaudhary[1], Sana Rehman[2], Arunabha Ray [2]

[1]Dept. of Ilmul Advia (Pharmacology), School of Unani Medical Education & Research (SUMER), Jamia Hamdard, New Delhi

[2]Dept. of Pharmacology, HIMSR, Jamia Hamdard University, New Delhi
***Corresponding author:** majafri@jamiahamdard.ac.in, 9999344184

Stress, a critical determinant of health and disease, plays a key role in the pathogenesis of neuropsychiatric disorders, as stressful events cause altered physiological, immunological, psychological, and neurobehavioral responses in animals and humans, including anxiety, depression, cognitive impairment, insomnia, anorexia, and hypothalamic-pituitary-adrenal axis activation. Acute stress is commonly associated with decrease in number and time spent in plus maze apparatus, an increase in oxidative stress markers such as Malondialdehyde levels, reduced glutathione (GSH) levels depletion, and increase in plasma corticosterone level. In rats, stress was created by giving them restraint stress, which causes brain derangement and an increase in various stress markers when compared to a control group. Different markers of stress were used to examine the effects of pharmacological treatments. Majoon Brahmi treatment revealed anti-stress effect that was comparable to those seen following standard medication treatment. When compared to control, stress induced changes was associated with higher levels of Malondialdehyde levels, but lower reduced glutathione (GSH) levels and increased level of plasma corticosterone level. Different degrees of attenuation in various oxidative stress markers were elicited by Majoon Brahmi. It concludes that optimized formulation of Majoon Brahmi were helpful in preventing acute stress in rats, as they significantly reduced stress markers.

JH/IASTAM2022/PP03

Role of Indian polyherbal Siddha formulation, Vatha Sura Kudineer given during chikungunya viral disease

Abdul Hasan[1*], Geetika Sharma[1], Shakshi Chaudhary[1], Shree Devi MS[2], Sathiyarajeswaran P[2], Vinayak S[2], Vimal Narayanan[3], Sujatha Sunil[1]

[1]Vector Borne Diseases Group, ICGEB, New Delhi, India
[2]Siddha Central Research Institute, Chennai, Tamil Nadu, India
[3]Sri Sri Institute for Advance Research, Bangalore, India
***Corresponding author**: abdulhasan@icgeb.res.in, 9873519881

Chikungunya infection is caused by chikungunya virus (CHIKV), an arthritogenic virus that causes joint inflammation. The inflammation continues even after the clearance of viruses from sera and may result in chronic arthritis that may remain for several months to years. We evaluated a Siddha (Indian Tradition Medical System) poly-herbal formulation that is prevalently given during CHIK outbreaks in southern part of India. In *in vitro* system, we explored the immunomodulatory effect of formulation's extracts on LPS-simulation RAW264.7 cells and antiviral effects on the Vero cell line. In *in vitro* cell-based assay, we found that the VSK formulation extracts possess antioxidant, anti-inflammatory and antiviral activity. The aqueous extract showed promising immunomodulatory effects where it showed 90 % of direct ABTS radical scavenging activity, significant suppression of ROS generation and enhances the SOD activity at the non-toxic concentration used for the assay; it was also able to suppress NO (Nitric oxide) release, PGE2 inflammatory mediator and inflammatory cytokines (IL-1β and TNFα) production in LPS-stimulated RAW264.7 cells. The ethanol extract showed around 40% viral reduction at a maximum non-toxic concentration (MNTC) for 48 h of treatment in the co-treatment assay. Further, through *in silico* network pharmacology predicted the multi-targets of the formulation.

JH/IASTAM2022/PP04

Scholarly review *Rauwolfia serpentina* (Asrol) phytochemical, pharmacological and therapeutic aspects

Abdul Wahab*, Faraha Ahmad, Mohammad Aslam

Department of Ilmul advia, School of Unani Medical Education and Research, Jamia Hamdard, New Delhi
***Corresponding author**: 8920300764, wahab1211@gmail.com

The extraordinary medicinal properties of *Rauvolfia serpentine* (Asrol) have brought this Unani drug plant to the attention of the medical world. All over the world, medicinal plants are occupying the main role in the traditional system of medicines which includes Siddha, Ayurveda, Unani, Yoga and Naturopathy. In the modern era, *Rauvolfia serpentine* (Asrol) is used as an effective Antihypertensive. Medical fraternity continues research on it. It helps to reduce blood pressure (Fisharuddam Qawi) by dilating blood-vessels depresses activity of central nervous system. Psychiatric disorders (Nafsiyati Amraz) and acts as a hypnotic (munavem).its use in schizophrenia (Malan khuliay), insanity (junoon), Sara (epilepsy), Hysteria (Akhtanaqur Reham).

Alkaloids are a class of naturally occurring organic compounds that mostly contain basic nitrogen atoms. This group also includes some related compounds with neutral So many alkaloids are found in rauwolfia like Ajmaline, Reserpine, Serpentine. *Rauwolfia Serpentina* (Asrol) is useful medicine and use by Unani physician from long time. Its have many medical benefits like anti-hypertensive (dafyeFisharuddamQawi), anti-migraine (dard e shaqiqa), nervine sedative (Musakkin-e-Asab), vasodilator (Mufattih), hypnotic (Munawwim). Some study show it's helpful in schizophrenia (Malan khuliay), insanity (junoon), Sara (epilepsy), Hysteria (Akhtanaqur Reham).overall rauvolfia serpntina has been crude beneficial in many aspect.

JH/IASTAM2022/PP05

Development of monograph, chemoprofiling and network pharmacological studies of a nephroprotective plant: Khar-e-Khasak Khurd (*Tribulus terrestris* Linn.)

Rustam Ekbbal[1,2], **Afeefa Khan**[2], Alfisha Mustafa[2], Sayeed Ahmad[2*]

[1]Department of Pharmacology, School of Pharmaceutical Education and Research (SPER), Jamia Hamdard, New Delhi, India

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, SPER, Jamia Hamdard, New Delhi, India
***Corresponding author**: sahmad_jh@yahoo.co.in

Khar-e-khasak-khurd (Tribulus terrestris Linn.) is a plant commonly known as Gokhru, is used in the traditional system of medicine. Khar-e-khasak-khurd is used to treat urinary and kidney disorders & possesses anti-inflammatory, immunomodulatory, antispasmodic and diuretic activity. The proposed study aimed to develop monograph, chemoprofiling and establish network pharmacology of Khar-e-khasak-khurd. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and a monograph was developed as per USP standards. Methanolic extract was prepared using the ultrasonication method. The prepared extract was subjected to the determination of total phenolic (Folin-ciocalteu method) and flavonoid content (Aluminium chloride method). Further, qualitative and quantitative estimation was carried out by developing a TLC fingerprint profile and quantification of active biomarkers. High-throughput bioautographic determination was carried out for the identification of antioxidant compounds using DPPH. In silico network pharmacology was carried out to determine the nephroprotective potential at the molecular level. Complete monograph of the nephroprotective plant Khar-e-khasak-khurd was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram of gallic acid and quercetin respectively. TLC profile was developed and quantification of active biomarkers was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. In silico studies reflected the nephroprotective effect of the plant at the molecular level and a network was established. The conducted study scientifically validates the traditional knowledge of the nephroprotective potential of the aforementioned plant can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP06

Antibacterial activity of *Rosa damascena* petals by HPLC analysis

Afreen Bano[1], Rizwan Ahmad[2]

[1]Hygia College of Pharmacy, Lucknow

[2]Azad Institute of Pharmacy & Research, Lucknow
***Corresponding author:** afipharmacy01@gmail.com

Infectious flora of the mouth, skin and intestines can cause destructive changes to human beings and animals resulting in various diseases of varying pathogenicity. The impetuous of the study was done to compare the antibacterial activity of ethyl extract of *Rosa damascena* dried petals. Also, few phytochemical studies were done to determine its phytochemical profile. During the last decade the design of new agents active against resistant bacteria remains the critical importance and has become an urgent need. Traditionally *Rosa damascena* is used as a flavouring agent, spice in meat dishes, sauce, ice-cream and in the treatment of chest pain, improving heart functions, treatment of menstrual bleeding and digestive problems and reduction of inflammation, especially of the neck. This plant is also used as a gentle laxative. Vapour therapy of rose oil is helpful for treating some allergies, headaches, and migraine. For the assessment of anti-bacterial activity, the ethyl extract was monitored using selected strains of bacteria. The extract was found to be active against the bacteria Steptococcus mutans and Klebseilla pneumonia. The column chromatography was done with the help of mobile phase (acetone) and silica gel 254 (stationary phase) by gradient elution technique. The extract was also phytochemically screened using chemical tests, TLC and HPLC techniques. *R. damanscena* was characterised by very less number of Monoterpenes and large number of sesquiterpenes and aliphatic components monoterpens were consists of a monoterpenes ester, 2- isopropyl5-methyl cyclohexyl ester and Citronellyl n- butyrate. There are six sesquiterpenes hydrocarbons namely β-patchaulene, α-santalene, β- selinene, α- selinene and γ- cadinene. There were aliphatic hydrocarbons four aliphatic alcohols, four aliphatic esters and one each aliphatic anhydride and aliphatic carboxylic acid. And the bacterial test results comes out the extract was successfully active against the bacteria *Steptococcus mutens* is facultatively anaerobic gram positive bacteria coccus commonly found in human oral cavity and is a significant of tooth decay. *Klebseilla pneumonia* is gram negative bacteria non- motile, encapsulated, lactose-fermenting facultative anaerobic rod-shaped bacterium.It appears as a mucoid lactose fermenter on MacConkey agar.

JH/IASTAM2022/PP07

Potential nephroprotective plants and their phytochemicals used in Unani formulations.

Aftab Alam[1], Sayeed Ahmad[1,2]*

[1]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi -110062

[1,2]Centre of Excellence (CoE) in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi-110062, India
***Corresponding author**: sahmad_jh@yahoo.co.in, 9891374647

Chronic kidney disease (CKD) is one of the most prevalent kidney disorders and has been characterized by progressive segmental glomerulosclerosis to end-stage renal disease (ESRD). Unani system of medicine contributes an essential role in alleviating acute and chronic ailments including kidney dysfunctions. The present systematic review aimed to explore Unani medicinal plants and their derived formulation as nephroprotective and aimed to generate a scientific database of medicinal plants to prevent or delay the progression of CKD. The data was screened from more than five electronic databases namely PubMed, ScienceDirect, Wiley, Scopus, Google scholar, etc. to find relevant information for traditional medicinal plants with nephroprotective potential. Several articles were screened with the search criteria “nephroprotective plants and CKD”. From these, a sizable number of articles were chosen. Previous studies revealed that Unani formulations had favorable nephroprotective effects and are safe and very effective in the first-line treatment of kidney illness. The phytochemicals with different research evidence having nephroprotective activity have been selected and reviewed. This review based on data fetched from articles regarding nephroprotective plants provides scientific grounds for rational discovery, development, and utilization of the same. In addition, a precise and more comprehensive evaluation of these plants needs to be carried out.

JH/IASTAM2022/PP08

Anti-convulsant potential of classical Unani formulation and its new dosage form: A preliminary approach

Aisha Siddiqui*, Sajida Sumaiya

Department of Ilmul Advia, School of Unani Medical Education & Research, Jamia Hamdard, New Delhi, India
***Corresponding author**: draishasiddiqui@jamiahamdard.ac.in

Epilepsy is the second most common chronic neurological condition seed by neurologists that is characterized by recurrent seizures. Antiepileptic drugs with a better efficacy and safety are rarely available which reveal an immense need for developing newer effective and safe alternative. Development of herbal anticonvulsant drugs as an alternative to synthetic drugs will be a precious contribution to health care system. A classical semisolid formulation Majoon Najah (MN) has been used as an effective holistic treatment for convulsive disorders like Malikholia (melancholia), Sara (epilepsy), Ikhtenaqur raham (hysteria), Junoon (schizophrenia) since decades in Unani medicine. It contains seven different plant parts. Most of the plants present in MN have been experimentally reported to ameliorate convulsions. But no experimental study has been carried out on the formulation MN for its anticonvulsant activity so far. Beside this, MN is a semi-solid preparation containing sugar which is a major obstacle to use it in patients in the present scenario. Hence, a comparative study has been designed to compare the anti-convulsant effect of MN and its other new dosage form i.e. hydroalcoholic extract (HEMN) and sugar free granules (GMN).in Increased Current Electroshock and Pentylenetetrazole induced convulsions in mice. It is reported that most of the antiepileptic drugs cause ataxia and adverse effects on cognition and behaviour. So it is important to screen the effect of any anticonvulsant drug on muscle co-ordination also. To evaluate the effect of test drug on motor co-ordination, rotarod test was carried out. The polyherbal formulation Majoon Najah, HEMN and GMN were given in dose of 1700mg/kg, 260 mg/kg and 600 mg/kg, respectively for 7 days. Statistical comparison was done by One way ANOVA followed by Dunett's t Test. The obtained results showed that the classical formulation Majoon Najah (MN) and its two developed dosage forms i.e. hydroalcoholic extract (HEMN) and sugar free granules (GMN) has a promising role in the management of epilepsy. Treatment with MN, HEMN and GMN significantly increased the seizure threshold current when compared with control in ICES test. Moreover, MN, HEMN and GMN significantly increased the latency of myoclonic jerks and clonic generalized seizures when compared with control in Pentylenetetrazole (PTZ) test. All the three forms did not produce any motor in co-ordination during rotarod test. These findings suggest that classical formulation Majoon Najah might have possible efficacy in the treatment of epilepsy and it is safer than conventional antiepileptic drugs.

JH/IASTAM2022/PP09

Anti-hepatocellular carcinoma and antioxidant properties of Unani medicinal plant Jamun *(Syzygium cumini)*

Akram[1], Md. Noman[1], Uzma Bano[2], Asim A Khan[3], Jamal Akhtar[3], Yuba R. Pokhareal[4], M. Shahar Yar[1*]

[1]Department of Pharmaceutical Chemistry, School of Pharmaceutical Education and Research (SPER), Jamia Hamdard, India

[2]School of Unani Medical Education and Research (SUMER), Jamia Hamdard, India

[3]Central Council for Research in Unani Medicine, Ministry of AYUSH, Government of India

[4]Faculty of Life Science and Biotechnology, South Asian University, New Delhi, India.
***Corresponding author**: yarmsy@rediffmail.com, 9811811033

Hepatocellular carcinoma (HCC) is the seventh most common cancer and the third leading cause of cancer-related death globally. It has a poor prognosis and is resistant to the majority of chemotherapeutics. The present review aimed to highlight studies into the tumour cycle and its prevention by appropriate herbal (Ayurvedic/Unani) medicine is essential to reduce the effects of the deadly disease. There are few treatment options for end-stage liver cancer, which forces patients to undergo expensive liver transplantation, which is not an option in the majority of nations. To find relevant data for publication on medicinal plants with hepatoprotective potential, researchers searched electronic databases such as PubMed, Sciencedirect, Wiley, Scopus, Google scholar, and Springer. The results of a thorough literature review was conducted to determine the function of several herbs with liver-protective and antioxidant characteristics are described here. Based on pre-clinical data of Hepatoprotective medicinal plants, this review provides a scientific foundation for the rational discovery, development, and application of these in future treatment practise. Furthermore, pre-clinical studies are required to improve our understanding of phytoconstituents' anti-HCC and antioxidant activity. Thus, more specific evaluation of natural sources is required.

JH/IASTAM2022/PP10

FDA approved NSAIDs conjugated ultrashort peptides against multi-drug resistant pathogens

Aman Kumar Mahto, Kanupriya, Saleem Akbar, Rikeshwer Prasad Dewangan*

Department of Pharmaceutical Chemistry, SPER, Jamia Hamdard, New Delhi-110062
***Corresponding author**: rpdewangan@jamiahamdard.ac.in

Antibiotics were introduced as miracle drugs in 20th century against infections, but now they have become less effective against raging multidrug resistant (MDR) pathogens such as MRSA, VRE, drug resistant Pseudomonas aeruginosa and Acinetobacter sp.. Because of the scientific progress, we now know that newer or resistant strains of bacteria combat antibiotics through mutations and adaptations. As a result, the simple solution is to develop new antibiotics with novel targets and modes of action. Several new classes of antibiotics have been introduced in recent years, with antimicrobial peptides (AMPs) being one of the most promising candidates. Over millennia, AMPs have evolved into inherent antimicrobial molecules and effective mediators of the innate and adaptive immune response. AMPs can have very long peptide sequence (upto 10-100 amino acid long), thereby increases its manufacturing costs. So, finding short AMPs is an urgent need. Here in this study, we have chosen the ultrashort peptide motif "H-Orn-Orn-Trp-Trp-NH_2" (OOWW) for conjugation of NSAIDs as hydrophobic acid in search of potent antimicrobial ultrashort peptides/peptidomimetics. All peptides/peptidomimetics synthesized by using the solid-phase peptide synthesis technique and evaluated against gram-positive and gram-negative bacterial strains including clinically relevant MDR pathogens. The designed peptides have shown their potency against both Gram-positive and Gram-negative strains, with MIC ranging between 0.9 – 31 mM in concentration & cytotoxicity against hRBC lies above 250 mM concentration. The designed peptides have shown great potential in terms of its antimicrobial potency and non-cytotoxic efficacy.

JH/IASTAM2022/PP11

Development of monograph, chemoprofiling and network pharmacology studies of a nephroprotective plant: *Samagh-e-arabi*

Anuradha Shee[1,3], **Shahzad Alam**[1] , Sayeed Ahmad[1,2*]

[1]Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India-110062

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology)

[3]Department of Food Technology, School of Interdisciplinary Sciences and Technology, Jamia Hamdard, New Delhi -110062
***Corresponding author**: 9891374647, sahmad_jh@yahoo.co.in

Acacia arabica L. (Family: *Fabaceae*) commonly known as 'Babool'. In Unani system of medicine, *Samagh-e-arabi* (*Acacia arabica*) is considered as plant having nephroprotective property. The aim of this study was to develop monograph, chemo profiling and establish network pharmacology of gum of *Acacia arabica L.* Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per USP standards. Methanolic extract was prepared using ultrasonication method. The prepared extract was subjected to determination of total phenolic (Folin-ciocalteu method) and flavonoid content (Aluminium chloride method). Further, qualitative and quantification estimation was carried out by developing a TLC fingerprint profile and quantification of active biomarkers. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective potential at molecular level. Complete monograph of the nephroprotective plant *Acacia arabica* was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram gallic acid and quercetin respectively. TLC profile was developed and quantification of active biomarkers was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of the plant at molecular level and network was established. The conducted study scientifically validates the traditional knowledge of nephroprotective potential of the *Acacia arabica* plant formulation and can be explored further atpreclinical and clinical levels.

JH/IASTAM2022/PP12

Development of monograph, chemoprofiling and network pharmacological studies of a nephroprotective plant: *Azadirachta indica* A. Juss (Neem)

Sultan Zahiruddin[1,2], **Anjali Gupta[1],** Anees Ur Rehman[1,2], Sayeed Ahmad[1,2]*

[1]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi- 110062

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard-110062
***Corresponding author:** sahmad_jh@yahoo.co.in

Neem is a traditional herbal drug used for treatment of various conditions like skin ulcers, stomach upset, intestinal worms, loss of appetite and diseases of heart, kidney and blood vessels. Neem leaves are used by local communities as antibacterial, antifungal and insecticidal. Powder of neem bark is used to promote wound healing and as anti-inflammatory. The study was carried out to develop a monograph, chemoprofiling and establish network pharmacology of leaves of *Azadirachta indica* A. Juss (Neem). Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per the USP standards. Methanolic extract of powdered drug was prepared and subjected to determination of total phenol and flavonoid contents. Qualitative estimation was carried out using preliminary phytochemical screening and TLC fingerprinting whereas quantification of active biomarkers by HPTLC. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective biomarkers at molecular level. Complete monograph of 0f leaves of *A. indica* was developed as per the USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram of gallic acid and quercetin, respectively. The TLC profile was developed for identification and quantification of active metabolites. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of metabolites and network was established. The conducted study was performed for standardization of the aforementioned plant and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP13

Development of monograph, chemoprofiling and network pharmacology studies of a nephroprotective plant: *Adhatoda vasica* (L.) Nees

Anubhav Joshi[1], Tayyaba Naeemi[1], Mohammad Umar Khan[2], Sayeed Ahmad[1]*

[1]Bioactive Natural Product Laboratory, SPER, Jamia Hamdard, New Delhi, 110062, India

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi, 110062, India
*__Corresponding author:__ sahmad_jh@yahoo.co.in

Adhatoda vasica (L.) Nees is a well-known plant drug in Unani medicine. It has been used for the treatment of various diseases and disorders, particularly for the respiratory tract and Urinary ailments. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per USP standards. Methanolic extract of powdered drug was prepared using ultrasonication method. The prepared extract was subjected to determination of total phenolic and flavonoid contents. Qualitative estimation was carried out using preliminary phytochemical screening and TLC fingerprinting whereas quantification of active biomarkers by HPTLC. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective biomarkers at molecular level. Complete monograph of the nephroprotective plant *Adhatoda vasica* was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram of gallic acid and rutin respectively. The TLC profile was developed for identification and quantification of active metabolites. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of metabolites and network was established. The conducted study was performed for standardization of the aforementioned plant and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP14

Development of monograph, chemoprofiling and network pharmacology studies of a nephroprotective plant: *Gazar*

Anuradha Shee[1,3], **Shaheen Shabbir**[1], Sariya Wasim[1], Sayeed Ahmad[*,1,2]

[1]Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India-110062

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology)

[3]Department of Food Technology, School of Interdisciplinary Sciences and Technology, Jamia Hamdard, New Delhi -110062
***Corresponding author**: 9891374647, sahmad_jh@yahoo.co.in

Daucus carota L. (Family: *Apiaceae*) commonly known as 'wild carrot' is a plant native to Europe and southwest Asia. The plant is used in Unani system of medicine for its nephroprotective property. The aim of this study was to develop monograph, chemo profiling and establish network pharmacology of *Daucus carota.* Preliminary pharmacognostic evaluation of the selected plant was done by studying its microscopic and macroscopic characters and monograph was developed as per USP standards. Methanolic extract was prepared using ultra sonication method. The prepared extract was subjected to determination of total phenolic (Folin-ciocalteu method) and flavonoid content (Aluminium chloride method) Further, qualitative and quantitative estimation was carried out by developing a TLC fingerprint profile and quantification of active biomarkers. High-throughput bioautographic determination was carried out for identification of antioxidant compound using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective potential at molecular level. Complete monograph of the nephroprotective plant *Daucus carota* was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram gallic acid and quercetin respectively. TLC profile was developed and quantification of active biomarkers was done. High – throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of the plant at molecular level and network was established. The conducted study scientifically validates the traditional knowledge of nephroprotective potential of the above mentioned plant formulation and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP15

Chaperone-like attributes of biogenic fluorescent gold nanoparticles: potential to alleviate toxicity induced by intermediate state fibrils against neuroblastoma cells

Anzar Abdul Mujeeb[1], Khan Farheen Badre Alam[1], Ansam Wadia Faid Alshameri[1], Fauzia Jamal[1], **Saba Farheen**[1], Mohd Kashif[2], Anees Ahmed[1], Irfan Ahmad Ghazi[3*], Mohammad Owais[1*]

[1]Interdisciplinary Biotechnology Unit, Aligarh Muslim University, Aligarh, India

[2]CSIR-National Botanical Research Institute, Lucknow, India

[3]Department of Plant Sciences, School of Life Sciences, University of Hyderabad, Hyderabad, India
***Corresponding authors**: mdowais2012@gmail.com, drirfang@gmail.com

In general, neurodegenerative disorders have a great deal of correlation with the misfolded as well as aggregated forms of protein-based macromolecules. Among various species formed during the aggregation process, protein oligomers have been classified as the most toxic entities against several types of living cells. A series of chemicals have been developed to inhibit protein aggregation as a measure to regulate neurodegenerative diseases. Recently, various classes of nanoparticles have also been reported to inhibit protein aggregation. In the present study, we synthesized fluorescent gold nanoparticles (B-AuNPs) employing *Olax scandens* leaf extract. Next, an in vitro study was performed to assess the effect of as-synthesized B-AuNPs on the aggregation behaviour of the ovalbumin (OVA). We performed an extensive study to elucidate the anti-amyloidogenic properties of nano-sized entities and established that small-sized B-AuNPs manifest chaperone potential against protein aggregation. Further, we exploited as-synthesized B-AuNPs as a mean to prevent protein aggregation-mediated toxicity in neuroblastoma cells.

JH/IASTAM2022/PP16

Exploring antityrosinase phytochemicals of kamala (*Nelumbo nucifera* Gaertn) by using TLC-MS-bioautography for hyperpigmentation

Areeba Insaf[1,2], Sayeed Ahmad[1,2]*

[1]Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard-110062
***Corresponding author:** 9891374647; sahmad_jh@yahoo.in

Nelumbo nucifera (kamala) (family, Nelumbonaceae) has long been used in foods and herbal teas. Studies have proven many biological actions such as anti-oxidant, anti-inflammatory, anti-obesity, anti-cancer activity. The photo-protective effect of lotus has been demonstrated as well as its anti-tyrosinase activity. Kamala has been selected to separate and demonstrate the compounds responsible for anti-tyrosinase activity. The proposed study aimed to explore anti-tyrosinase phytochemicals of kamala by using TLC-MS-Bioautography for hyperpigmentation. Qualitative analysis was performed for total phenolic compounds, total flavonoid compounds & antioxidant activity. HPTLC was performed using solvent system Toluene: ethyl acetate: formic acid (6:3:1 v/v/v). The same solvent system was used to perform TLC-bioautography and method validation was performed with quercetin, kaempferol and rutin. The plate was treated with tyrosinase enzyme to evaluate anti-tyrosinase activity of bands detected white in color against creamish background. Qualitative analysis showed very good phenolic, flavonoid content and anti-oxidant activity. Various solvent systems were tried for TLC development and finally (solvent system) was selected. Method validation parameters such as precision, accuracy, robustness was evaluated. It was found that some of the compounds detected on plate had very good anti-tyrosinase activity. Compounds were identified by Mass analysis. The findings of this study revealed that *nelumbo nucifera* Gaertn possesses potent anti-tyrosinase compounds and hence, the plant can be utilized for hyperpigmentation treatment as a cost-effective and ecofriendly option to treat various skin disorder.

JH/IASTAM2022/PP17

Role of *Cuscuta reflexa* in control and management of Melancholia (Depression)

Arfa Bano*, Abdul Wadud

Department of Ilmul Advia and Director of National Institute of Unani Medicine, Bengaluru, Karnataka
Corresponding author: arfakhan1996@gmail.com

Melancholia is defined as a disorder in which mental functions are deranged and the afflicted person is more prone of constant grief, fear, and dubious aggression. Furthermore, the ability to analyze and interpret things is grossly affected as stated by *Jalinoos* (Galen) and quoted by *Zakariya Razi* in his book "KITAB-AL-HAWI". According to Unani physicians it is a severe form of depression caused by accumulation of *muhtariq sauda* (burnt black bile) or *muhtariq safra* (burnt yellow bile) in the brain. Female is more prone than male approximately it is 50% higher than males. It was second leading cause of disability across worldwide as per Global Burden of Disease Study 2010. According to *Jalinoos*, it is a strong melanogogue. Unani scholars have been used *Aftimoon* (C. reflexa) for ages to treat *Sawdawi Amraz* which includes the diseases of nerves, brain and psychological disorders such as nightmares (*Kābūs*), melancholia (Malikholia), insanity (Junūn) paralysis *(Fālij*), epilepsy (*Ṣar'a*), facial palsy (*Laqwa*), and schizophrenia. Psychological diseases are not easy to manage and need long term treatment with counselling of the patients. The available literature and recent studies on C. reflexa have proved that it is an important drug for the treatment of various kind of psychological disorders as shown by various kind of comprehensive preclinical studies. It can be concluded that C. reflexa is a very effective, safe, and promising drug for the treatment of psychological disorders. The details of the drug will be presented in full length paper presentation.

JH/IASTAM2022/PP18

Scrutinizing the nutraceutical potential of naturally originated Omega-3 fatty acids against cardiovascular ailments: A leading avenue

Arhat Jain*, Madhukar Garg

Department of Pharmacy, Chitkara College of Pharmacy, Chitkara University, Rajpura, 140 – 101, India.
***Corresponding author**: 87087-25651, arhatjain94@gmail.com

The modernised period has invited the exuberance of cardiovascular complications primarily dominated by the hypercholesterolemia, angina, atherosclerosis, myocardial infarction etc., which are largely prevailing in every stratum of the society and bursting out as the vital ailment. Synthetic drugs are available for the treatment but they do suffer from serious side effects and adverse effects, as require treatment for prolonged duration worsened by non-compliance. Present work was designed to investigate the preventive benefits against the mentioned ailments by employing the nourishing and dietary supplements, such as omega-3 fatty acids derived from the natural sources possessing EPA (Eicosapentaenoic acid), tocopherol acetate, ALA (α- linolenic acid), DHA (Docosahexaenoic acid) oryzanol etc.

The compilation confers the information after undergoing the thorough literary analysis done by searching the Google Scholar, PUBMED, as well as other sources of literature available at the Chitkara University library that renders the detailed insights in respective discipline. The scrutiny revealed that oryzanol and DHA are more potent than other ones and owns more pronounced tendency to function as the proficient nutritive supplements to markably alleviate the prevalence of heart complications. Conclusively, it is determined that these omega-3 fatty acids and other mentioned naturally derived nutritive constituents imparts the considerable and potential preventive actions that ultimately circumvents the occurrence of certain cardiovascular disorders.

JH/IASTAM2022/PP19

Leaves of *Aegle marmelos* reduces mammary tumor burden induced by fructose drinking, exposure to EMF from mobile phones and 7,12-Dimethylbenz[a]anthracene (DMBA) in adolescent female rats.

Arshvir Kaur[1], Jayachandran Nair CV[2], Tapas Chandra Nag[3], Sandeep Mathur[4], Chandra Prakash Prasad[5], Rajani Mathur[1]*

[1]Department of Pharmacology, Delhi Institute of Pharmaceutical Sciences and Research, DPSRU, New Delhi, INDIA

[2]Department of Pharmacology, Government Medical College, Thiruvananthapuram, INDIA

[3]Department of Anatomy, Neurobiology Laboratory, All India Institute of Medical Sciences, New Delhi, INDIA

[4]Department of Pathology, All India Institute of Medical Sciences, New Delhi, INDIA

[5]Department of Medical Oncology (Lab), All India Institute of Medical Sciences, New Delhi, INDIA
***Corresponding author**: mathurajani@gmail.com

EMF from mobile phones (IARC Group 2B) and 7,12-Dimethylbenz[a]anthracene (DMBA; IARC Group 1) are known inducers of mammary carcinogenesis adult females, but their cumulative role in fructose (15%) drinking growing females is not established. The main aim of the study was to investigate the cumulative role of fructose drinking, EMF and DMBA on mammary carcinogenesis in growing female rats, and explore the protective potential of *Aegle marmelos* leaves (AM-HM) therein. Weaned female Wistar rats, were randomly divided into two groups-FED and FED-AM and exposed to (i) fructose drinking solution (15%)+chow diet, *ad libitum*, (ii) EMF from mobile phones (1400 MHz, 2 Hours/day), and (iii) DMBA (5 mg/rat/week x 6 weeks, po). FED-AM additionally received AM-HM (500 mg/Kg, po). Tumor incidence in FED-AM was reduced to 66.67% and latency of mammary tumor was delayed from Day 90 to Day 114 ($P<0.05$). The mortality was reduced by 33.33% with reduction in tumor volume and burden *vs* FED ($p<0.01$). AM-HM reduced tumor incidence, tumor burden and delayed latency in growing female rats with mammary tumors induced by fructose drinking, EMF from mobile phones and DMBA.

JH/IASTAM2022/PP20

Pharmacognostic, phytochemical and pharmacological investigations of *Lasia Spinosa (L) Thwaites*: *In-silico, in-vivo* studies

Arya Lakshmi Marisetti[1*], Ganga Rao Battu[2]

[1]Assistant Professor, Department of Pharmacognosy and Phytochemistry, Delhi Pharmaceutical sciences and Research University, New Delhi.

[2]Professor, Department of Pharmacognosy and Phytochemistry, Andhra University College of Pharmaceutical sciences, Andhra University, Andhra Pradesh.
***Corresponding author**: 701317577, maryalakshmi@dpsru.edu.in

The aim of the study was to examine the pharmacognostic, phytochemical and the anti-oxidant, anti-inflammatory and anti-arthritic (Pharmacological) effect of *Lasia spinosa (L): Thwaites* rhizome extracts and isolates on in-vitro and in-vivo models in the rats of Freund's complete adjuvant (FCA) mediated arthritis compiled through molecular docking study of plant-steemed phytocompounds with specific targets. *Lasia spinosa* methanol extract (MELS) was subjected to acute oral toxicity in rats and tested against FCA induced arthritis in rats. Large-scale isolation and chromatographical analysis with spectral review verified that chlorogenic acid (CA) is also responsible for the pharmacological effects reported. The efficacy of MELS and CA against CFAinduced arthritis was subsequently tested for hematological, biochemical and in vivo anti-oxidant parameters in rats on the last day of the research. The IL-6 and TNF-α expressions in the paw tissue were determined by Western blotting technique. Ankle joint histopathological and radiological studies were also conducted. MELS and CA dosage based on anti-arthritis, which was obvious in comparison with an arthritis control group with decreased paw volume, joint diameter, and body weight. MELS and CA showed significant antiarthritic activity by rising RBC and Hb levels and decreasing WBC and platelet levels. The antiarthritis function has also been verified by the altered biochemical and anti-oxidant parameters and further confirmed by histopathological radiological tests with in silico analysis. This study scientifically confirms the ethnomedicinal use of *Lasia spinosa (L)* rhizomes in the treatment of arthritis.

JH/IASTAM2022/PP21

Development of monograph, chemoprofiling and network pharmacology studies of a nephroprotective plant: *Sehjana*

Niharika, **Arzoo Malik**, Dilshad Ali, Mohammad Raahim, Sayeed Ahmad*

Centre of Excellence in Unani Medicine (Pharmacognosy & Pharmacology) Bioactive Natural Product Laboratory (BNPL), Jamia Hamdard, New Delhi - 110062, India
***Corresponding author:** 9891374647, sahmad_jh@yahoo.co.in

The *Moringa oleifera* or drumstick tree belongs to family *Moringaceae*. It is known for its nutritive values, phyto-chemicals and pharmacological activities in traditional medicine as well as in unani medicine. It has positive effects on treating renal disorders. Preliminary pharmacognostic evaluation of the *Sehjana* was done by studying its macroscopic and microscopic characters and monograph was developed as per USP standards. Methanolic extract was prepared using ultrasonication method. The prepared extract was subjected to determination of total phenolic (Folin-ciocalteu method) and flavonoid content (Aluminium chloride method). Further, qualitative and quantitative estimation was carried out by developing a TLC fingerprint profile and quantification of active biomarkers. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. In silico network-pharmacology was carried out to determine the nephroprotective potential at molecular level. Complete monograph of the nephroprotective plant *Sehjana* was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram gallic acid and quercetin respectively. TLC profile was developed and quantification of active biomarkers was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. In-silico studies reflected nephroprotective effect of the plant at molecular level and network was established. The conducted study scientifically validates the traditional knowledge of nephroprotective potential of the aforementioned plant formulation and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP22

CCD assisted optimization of dual drug loaded thermoreversible nanoliposomes for intranasal delivery

Asad Ali, Mohd Aqil*

School of Pharmaceutical Education & Research, Jamia Hamdard, New Delhi, India-110062
***Corresponding author**: 9811798725, maqil@jamiahamdard.ac.in

The complex and deep persistent feeling of sadness, misery and often regretfulness is characterized as depression by the society worldwide. Nose to brain drug delivery is considered as valuable route for many neurodegenerative disorders including depression. *In-situ* thermoreversible nanoliposomal gel has better mucoadhesion and increase residence time of drug thus decreasing frequency of drug administration via intranasal route. The primary objective of this study is to optimize a new formulation of Fluoxetine- Embelin loaded thermoreversible nanoliposomes using design expert software version 13. The goal is to minimize the particle size & PDI ad enhance the entrapment efficiency. To optimize our formulation we have applied surface response methodology. Specifically, 3- factorial 3- level central composite design is used. The independent variable selected were amount of Leciva-S100 (X_1), Cholesterol (X_2) and Sonication Time (X_3). The dependent variables were Vesicles size (Y_1), PDI (Y_2) and Entrapment Efficiency (Y_3). The concentration range (low, medium & high) of independent variables were selected based on the following observation from preliminary experimentations. Twenty runs were obtained with axial points +alpha and -alpha. The quadratic model was determined to be the most suitable. The large model F-value and P values lesser than 0.05 implies that model is significant. The Predicted R^2 is in reasonable agreement with the Adjusted R^2 i.e., the difference is less than 0.2. The signal to noise ratio is greater than 4 indicating an adequate signal & model can be used to navigate the design space. The formulation was optimized and results confirmed the reliability of the optimization process.

JH/IASTAM2022/PP23

Withaferin a decreases warburg effect in breast cancer cell lines via decreasing c-myc expression

Asifa Khan

Jamia Millia Islamia, New Delhi, 110025, India
Corresponding author: asifakhan0001@gmail.com

Breast cancer is the most diagnosed cancer and the leading cause of mortality among women in India and worldwide. Reprogrammed glucose metabolism is considered as the hallmark of the cancer with immense therapeutic relevance. Withaferin A (WA), phytocompound isolated from the plant *Withania somnifera*, commonly known as Ashwagandha has the remarkable anticancer role. However, the mechanism of action of WA in breast cancer metabolism is still unclear. MBA-MB-231, MBA-MB-468, MBA-MB-453 and MCF-7 cells were procured from NCCS Pune and maintained in DMEM media supplemented with 10%FBS.SRB dye was used for for cell viability as it binds to the protein of the cells. Further Colony formation assay (using crystal violet dye) was done to evaluate the effect of WA. Metabolic assays (lactate production, glucose uptake and ATP generation) were performed using kits, Western Blotting, RT-PCR data were analyzed using graph pad prism. Breast cancer patient METABRIC data was analyzed using Pathifier algorithm. Withaferin A decreased the glucose uptake, lactate production and ATP production in different breast cancer cell lines. Further, WA induced suppression of key glycolytic enzymes via c-myc, decreased cell proliferation, biomass and colony formation ability of the breast cancer cells. Clinical relevance of our experiments was validated in dataset of ~2000 breast tumors (METABRIC) using Pathifier algorithm wherein we calculated deregulation score of glycolysis pathways in each of the tumor and normal sample. Importantly, higher deregulation of glycolysis was observed in breast tumor compared to normal tissues and found to be associated with poor prognosis. Our results highlight the anti- carcinogenic effect of Withaferin A in modulating breast cancer metabolism and the clinical significance of glycolysis in general.

JH/IASTAM2022/PP24

Polyherbal formulation as antipsoriatic therapy

Asma Praveen, Ajay Sharma*

Department of Pharmacognosy & Phytochemistry, School of Pharmaceutical Sciences, Delhi Pharmaceutical Sciences and Research University, New Delhi
***Corresponding author**: asma.fss01@gmail.com; ajaysharmapharma1979@gmail.com

Psoriasis is an autoimmune disease with long-lasting inflammation associated with skin lesions. Psoriasis, if not managed properly, leads to other severe health conditions involving obesity, diabetes, depression, metabolic and heart disease. Topical, systemic, biologics, and phototherapy are all current therapeutic approaches with their own set of benefits and drawbacks. The community, now showing concern for herbal medicines as a result of an increased understanding of phytopharmaceuticals. Synthetic drug treatment results in challenges and secondary effects, which can be overcome by combination therapy including different phytochemicals with synthetic medicines. For example, flavonoids, tannins, coumarins, and essential oils present in Scutellaria baicalensis, Rhus mysorensis, Curcuma longa, and Lemon grass are effective against psoriasis.

JH/IASTAM2022/PP25

Impact of renal-anemia in chronic myeloid leukemia patients treated with Imatinib

Avinash Kumar Singh[1], Manju Sharma*[2]

[1]Department of Pharmaceutical Medicine (Division of Pharmacology), School of Pharmaceutical Education & Research, Jamia Hamdard, New Delhi-110062, India.

[2]Department of Pharmacology, School of Pharmaceutical Education & Research, Jamia Hamdard, New Delhi-110062, India.
Corresponding author: msharma@jamiahamdard.ac.in, 9810786730

Chronic myeloid leukemia (CML) is a type of blood cancer and affects the blood and bone marrow**.** Knowledge of the renal-anemic toxicity profile of imatinib treatment in chronic myeloid leukemia is inconclusive. In this study, we evaluated renal function and anemia during imatinib treatment in CML patients. CML patients with chronic phase (CP) who had been treated with only imatinib for 12 months at Rajiv Gandhi Cancer Institute and Research Centre (New Delhi, India) were enrolled and prospectively analyzed. The chronic renal impairment parameters including estimated glomerular filtration rate (eGFR) and hemoglobin levels for anemia from June 2020 to June 2022 were monitored in newly diagnosed CML-CP patients at different time points. 41 patients with chronic myeloid leukemia chronic phase who had been on imatinib for 12 months were monitored. The mean estimated glomerular filtration rate (eGFR) was significantly decreased over 12 months (74 ± 14 to 59 ± 12 ml/min/1.73m^2, $P<0.001$). Mean hemoglobin levels also significantly decreased after 12 months. (10.9 ± 2.01 to 9.0 ± 1.02, $P<0.004$). We recommended close monitoring of renal function in CML patients with pre-existing renal impairment and also to avoid use of other nephrotoxic drugs and monitoring of hemoglobin level with identifying the cause of anemia is major concern for the CML patients treated with Imatinib.

JH/IASTAM2022/PP26

Comparative assessment of method of preparation of lipid-polymer hybrids for the delivery of herbal drug

Ayesha Waheed, Mohd. Aqil*, Yasmin Sultana, Zeenat Iqbal

Department of Pharmaceutics, School of Pharmaceutical Education & Research, Jamia Hamdard, New Delhi, 110062
***Corresponding author**: maqil@jamiahamdard.ac.in

Lipid-polymer hybrids are formulated with glyceryl monooleate (GMO) and Poloxamer 407 (P407) in aqueous media offering an excellent caliber for encapsulating hydrophobic and hydrophilic drugs. They improve the biopharmaceutical aspects of dermal delivery of drugs. Due to the similarity of structure to the lipidic structure of skin, lipid-polymer hybrids provide greater penetration of active molecules in deeper layers of skin. The study aims to assess the method of preparation using two major methods for further evaluation and characterization of herbal drug. Lipid-polymer hybrids are prepared using top-down and bottom-up techniques and are assessed using transmission electron microscopy (TEM). The final lipid-polymer hybrid was further characterized using optical microscopy and PXRD. Finally, a skin penetration stud was conducted using CLSM. It was observed that lipid-polymer hybrids produced by top-down technique were more cubic in shape. Although there was a presence of liposomal vesicles but there was an enhanced comparative number of liposomal vesicles when produced from bottom-up technique. Therefore, liquid precursor method was considered more of a practical approach for the preparation. PXRD graph showed crystalline nature of hybrids and amorphous nature of drug. CLSM study showed deeper penetration of hybrids into the skin. A robust herbal drug loaded lipid-polymer hybrids were developed with suitable method. Completely entrapped drug and crystalline nature of formulation was observed. Confocal studies showed a deeper penetration of cubosomes indicative of better targeting into deeper skin tissues.

JH/IASTAM2022/PP27

An approach to study essential genes in *Candida albicans*

Basharat Bashir Teli, Krishnamurthy Natarajan

School of Life Sciences, Jawaharlal Nehru University, New Delhi 110067

Approximately 20% of the genome in the budding yeast *Saccharomyces cerevisiae* encodes genes essential for the survival of an organism or a cell. As null mutations cannot be constructed for the essential genes, classical genetic approaches such as conditional depletion strategies have been employed. However, the inactivation by depletion strategies has suffered from either a long delay in depletion with attendant secondary effects or incomplete depletion due to leaky promoter shut-off. Therefore, an attractive strategy was developed in *S. cerevisiae* to rapidly relocate nuclear proteins to ribosomes known as Anchor away technology. Several publications have compared the Anchor Away strategy with classical depletion strategies and have shown superior performance in terms of being more specific and rapid to deplete. Besides, these studies have also shown surprising differences with the more classical conditional alleles. The fungal pathogen *Candida albicans* genome contains ~6198 open reading frames, of which only 1778 (~30%) are verified. By conditional depletion strategy, In vivo transposon mutagenesis and machine learning, and using other techniques 1658 essential genes have been identified in *C. albicans* and thus a large fraction of genes are yet to be studied. Furthermore, in the different studies, it has been found that there are many genes that are essential in *C. albicans* and nonessential in *Saccharomyces cerevisiae* or vice versa. After finding new drug targets/genes with this technique, we can evaluate the antifungal activity of different Unani drugs/ drug extracts and their mechanism of action in *C. albicans.* Polymerase chain reaction (PCR)-based method for direct gene deletion and the generation of epitope-tagged fusion proteins will be used for making different mutants. In different Anchor Away strains growth assay like spot assay can be used to check the survivability and pathogenicity of this pathogen in presence of different drugs. Also, to check the gene expression under different conditions RT-PCR and western blotting. *C. albicans* rbp1/rbp1 and TOR1-1/TOR1 mutants are rapamycin resistant. The rbp1/RBP1 heterozygous rbp1/rbp1 homozygous, and TOR1-1/TOR1 heterozygous mutants were constructed. Different mutants made and work to make other is under study.

JH/IASTAM2022/PP28

Isolation, identification of marker compounds and standardization of immunomodulatory AYUSH Kwath formulation

Bashir A. Lone[1,2], Narendra Singh Chauhan[2,3], Govind Yadav[2,3*], Vikas Babu[2,4], Prasoon Gupta[1,2*]

[1]Natural Products Chemistry Division, CSIR-Indian Institute of Integrative Medicine, Jammu

[2]Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201002, India

[3]Cancer Pharmacology Division, CSIR-Indian Institute of Integrative Medicine, Jammu.

[4]Fermentation and Microbiology Biotechnology Division, CSIR-Indian Institute of Integrative Medicine, Jammu.
***Corresponding author:** bashir.bl80@gmail.com

Considering the importance of immunity boosting measures in context of COVID-19 outbreak, the Ministry of AYUSH, Government of India with the interest of health promotion of the masses, recommends 'Ayush Kwath (AK)' or 'Ayush Kudineer'. which comprises of four medicinal herbs, viz holy basil (tulsi), cinnamon, ginger, black pepper is easily available, accessible and widely used in the kitchen and are convenient to educate and train about its use to community health workers, community and even to all public that they can have cost effective treatment with herbal home remedies. The WHO SEARO adopted a resolution to revitalize PHC through health systems strengthening to achieve health for all with the emphasis on health promotion and disease prevention. This Kwath is not just a mechanical mixture invented for the COVID-19 pandemic, but it is a revival of health tradition. Present investigation was aimed to isolate and identify the major marker compounds for the standardization of the Ayush Kwath formulation. After optimization of extraction and fractionation process, ten compounds were isolated using column chromatography from the crude ethanol extract of AK. Eugenol, Ursolic acid, 6-Gingerol and Dehydrozingerone were found as a major marker compounds of Ayush kwath. Further crude extract and fractions (AK-EtOH, AK-EtOAC, AK-MeOH: H2O) were investigated for pro-inflammatory cytokines from LPS-activated RAW264.7 macrophage cell line, and were assessed for determination of cytokine released (IL-6 and TNF-α) from treated RAW264.7 cells. Results showed that maximum inhibition was observed at 20 µM.

JH/IASTAM2022/PP29

Development of monograph, chemoprofiling and network pharmacology studies of a nephroprotective plant: Sharbat-e-Alu Balu

Bhanu Pratap[1], Mohd Amman Saifi[1], Arshad Hasan[1], Mohammad Umar Khan[2], Sayeed Ahmad[1]*

[1]Bioactive Natural Product Laboratory, SPER, Jamia Hamdard, New Delhi, 110062, India

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi, 110062, India
***Corresponding author:** sahmad_jh@yahoo.co.in

Sharbat-e-Alu balu is a traditional Unani formulation, popularly used for the management of kidney diseases without any scientific data. Ingredients of Sharbat-e-Alu balu have strong therapeutic relevance against the malfunction of kidney's system. Preliminary pharmacognostic evaluation of the selected plant was done by studying monograph, developed as per USP standards. Methanolic extract was prepared using ultrasonication method. The prepared extract was subjected to determination of total phenolic (Folin-ciocalteu method) and flavonoid content (Aluminium chloride method). Further, qualitative and quantitative estimation was carried out by developing a TLC fingerprint profile and quantification of active biomarkers. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective potential at molecular level. Complete monograph of the nephroprotective ingredients of Sharbat-e-Alu Balu was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram gallic acid respectively. TLC profile was developed and quantification of active biomarkers was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of the plant at molecular level and network was established. The conducted study scientifically validates the traditional knowledge of nephroprotective potential of the aforementioned Sharbat-e-Alu Balu and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP30

Post-COVID-19 Parkinsonism: Therapeutic potential of phytochemicals

Chhavi*, Mahaveer Dhobi

Department of Pharmacognosy & Phytochemistry, Delhi Pharmaceutical Sciences and Research University, New Delhi
***Corresponding author**: 7451056629, chhavisingh9696@gmail.com

Coronavirus disease 2019 (COVID-19) is a communicable disease caused by the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). SARS-CoV-2 induces many post-COVID-19 complications like neurological or psychiatric disorders majorly including anxiety, depression, sleep and cognition problems, Parkinson's disease (PD), multiorgan dysfunction and organ impairment (lung, heart, kidney and liver), impaired lung diffusion, intracranial haemorrhage etc. PD is one of the prominent post-COVID-19 complication which is a neurodegenerative disorder affecting 1% of the population above 60 years of age with an annual incidence of 15 per 100,000 population characterized by movement disorders including bradykinesia, tremor, imbalance, rigidity, postural instability and presence of Lewy bodies (LB) and α-Synucleinopathy. Viral infections can trigger the accumulation of LB and α-Synuclein (α-SN) in brain. The SARS-CoV-2 infection has been predicted as a potential risk factor for developing Parkinsonism-related symptoms in a significant portion of COVID-19 patients. SARS-CoV-2 spreads from nasal epithelium to different brain regions through the neural pathway and induces cytokine storm responsible for neuroinflammation which causes various neurological deficits like inducing defects in dopamine system, loss of dopaminergic neurons, and accelerates synucleinopathies in brain which are considered as underlying causes of PD. Many plants contain phytochemicals which can improve the PD symptoms and have neuroprotective properties. Furmarprotocetraric acid, flavonoids, Desmethoxyangonin, Dihydromyricetin etc. bioactive phytochemicals have been reported for Inhibition of Tumor Necrosis Factor-α (TNF- α), α-SN fibril formation and monoamine oxidases (MAO), neuroprotective and antioxidant activities. Natural compounds are inspiration of new therapeutic protocols for the prevention and/or treatment of PD and post-COVID-19 PD complications.

JH/IASTAM2022/PP31

Stability studies of amla-blended sugarcane juice at refrigerated and room temperature

Dabeer Khan[1], Varsha Srivastava[2], Sayeed Ahmad[1,2,3*]

[1]Department of Food technology, SIST, Jamia Hamdard, New Delhi-110062, India

[2]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi -110062

[3]Centre of Excellence (CoE) in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi-110062, India
***Corresponding author**: sahmad_jh@yahoo.co.in, 9891374647

Sugarcane juice is highly nutritious thirst quenching drink. The preservation of raw sugarcane juice is very difficult because it turns brown soon after extraction and gets spoiled due to fermentation within hours. In Unani system of medicine, sugarcane juice is given to patients suffering from jaundice. It is considered to be hepatoprotective. The traditional activity of sugarcane juice is scientifically validated for its anti-inflammatory, anti-diabetic, analgesic and hepatoprotective potential. The aimof the study was to develop “ready to drink” amla-blended sugarcane juice to enhance its shelf life. Different combinations of amla-blended sugarcane juice were prepared by mixing amla juice in different proportions. These blends were treated at 70°C for 10 min along with addition of potassium metabisulphite. It was observed that TSS decreased with the increase in storage period. The pH of various blends decreased during storage but decrease was less with increase in proportion of amla juice. Titratable acidity increase with the increase in storage period was observed. The blends having higher proportion of amla juice were found have to have minimum microbial count. Good quality sugarcane juice with satisfactory storage stability of 40 days at refrigeration and 10 days at room temperature was achieved from heat treated sugarcane juice at 70 °C for 10 min after addition of amla juice. An acceptable “ready to drink” sugarcane juice was achieved by addition of 5% amla juice with an enhanced shelf life.

JH/IASTAM2022/PP32

A review on *Adiantum incisum* Forsk

Manorama, **Daksh Kapil**, Raj kumar Tiwari*

University of Petroleum & Energy Studies, School of Health Sciences & Technology Department of Pharmaceutical Sciences, Dehradun, Uttarakhand, 248001
***Corresponding author**: rktiwari@ddn.upes.ac.in

Adiantum incisum forsk. belongs to the family Pterideace. This plant is known as Hansraj in India; maidenhair fern in English. It is a valuable ethnomedicinal plant in Uttarakhand. It is used as a remedy in traditional therapy and has an important role in medicine and public health. Traditionally; leaves, young fronds and roots of the plant are mainly used in the treatment of diabetes, hepatoprotective, skin disease, malaria, emetic, bronchial disease, bone fracture, alopecia. Studies indicate maidenhair fern possesses antioxidant activity, anti-diabetic, hepatoprotective, antimicrobial and cytotoxic activity. The most common use of maidenhair fern in hair problems is to prevent alopecia and dandruff. These results are very motivating and indicate these herbs should be more explored to confirm these results and reveal other potential and protective effects. The primary aim of this study was to do literature review on essential characteristic of *Adiantum incisum* forsk and compile all new information on its phytoconstituents and pharmacological activities. The data for the literature review on *Adiantum incisum* forsk were collected through searching Google Scholar, Pub med, Science Direct, Medline and Indian medicinal database. The terms searched were “Hansraj”, “*Adiantum incisum*”, “Fern”, “Pteridophytes”, “Uttarakhand”, “Medicinal plant”, “Maidenhair fern”. *Adiantum incisum* forsk can be a good candidate for clinical purpose. Clinical study should be conducted in order to prove its other actions which are still scientifically unexplored.

JH/IASTAM2022/PP33

Nanonization of magnoflorine encapsulated novel chitosan-collagen nanocapsules for neurodegenerative diseases

Dar Junaid Bashir[1], Saliha Manzoor[1], Imran A Khan[1], Masarat Bashir[2], Nidhi Bharal Agarwal[3], Mohammed Samim[1*]

[1]Department of Chemistry, School of Chemical and Life Sciences, Jamia Hamdard, New Delhi-110062, India

[2]COTS, Mirgund, SKUAST Kashmir, Shalimar, Jammu and Kashmir-193121 India

[3]Centre for Translational and Clinical Research, Jamia Hamdrad, New Delhi-110062, India
***Corresponding authors:** mshamim@jamiahamdard.ac.in

Neurodegeneration is one of the most common diseases in the aged population, characterized by the loss in the function of neuronal cells and their ultimate death. One of the common features in the progression of this type of diseases is the oxidative stress. Drugs which are currently being used have been found to show lateral side effects, which is partly due to their inefficiency to cross blood-brain-barrier. Nanoencapsulation of bioactive compounds is a profound approach in this direction and has become a method of choice nowadays. This study involved the evaluation of the anti-oxidative properties of Magnoflorine (MF) which is an aporphine quaternary alkaloid and synthesis of Magnoflorine loaded Chitosan-collagen nanocapsules (MF-CCNc) for its better efficacy as a potent anti-oxidant. Physiochemical characterization of the synthesized nanocapsules was done by using dynamic light scattering (DLS) and transmission electron microscopy (TEM). It revealed that the synthesized nanocapsules are of small size range as small as 12±2 nm and are more or less of spherical shape. Sustained release was shown by MF in the *in vitro* drug release studies. Both MF and MF-CCNc were found to have good anti-oxidant potential with IC_{50}< 25µg/ml. No major cytoxicity was shown by the synthesized nanocapsules on SH-SY5Y cells. *In silico* anti-acetylcholinesterase (AChE) studies were also done and it revealed that MF can be a potent inhibitor of AChE.

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Phytochemical investigation and anthelmintic activity of *Evolvulus alsinoides* L.

Divya Sharma*, Sumayya Halim, Mahaveer Dhobi

Delhi Pharmaceutical Sciences and Research University, New Delhi, 110017
***Corresponding author:** divyasharmapharmacy@gmail.com

Anthelmintics are the drugs that either kill (vermicide) or drive out (vermifuge) invading helminths. According to Ayurvedic pharmacopeia, *Evolvulus alsinoides* L., also known as Shankhpushpi, has vermifuge and memory-improving properties. This study's major goals were to perform physicochemical and phytochemical standardization, as well as to assess the anthelmintic activity of several extracts of the whole *Evolvulus alsinoides* plant. As per the recommendations of the World Health Organization, the entire plant undergoes quality control standardization. Then, using n-hexane, petroleum ether, chloroform, acetone, ethanol, and water, six different extracts of *Evolvulus alsinoides* were prepared. The amount of luteolin in these extracts was measured using high-performance thin-layer chromatography. In vitro, anthelmintic activity was screened on Indian adult earthworms due to its similarities to intestinal roundworms of humans. Doses of 100 mg/ml of each dried extract were mixed with PBS and earthworms were placed in them. Paralysis and/or death of earthworms were taken as a criterion for anthelmintic activity. Most of the physicochemical parameters were found to be within the prescribed limits of World Health Organization guidelines, while, the plant material did not show the presence of any aflatoxins. Ethanol extract of *Evolvulus alsinoides* showed potent anthelmintic activity and the maximum amount of luteolin was also found to be present in the ethanol extract compared to other extracts. Thus, the potent anthelmintic activity of ethanol extract of *Evolvulus alsinoides* could be attributed to luteolin's presence.

JH/IASTAM2022/PP35

Phytochemical investigation of *Tinospora cordifolia* to identify novel NCE's for antiviral treatment

Dixhya Rani[1,2], Sumeet Gairola[2,3], Prasoon Gupta[1,2*]

[1]Natural Product Chemistry Division, CSIR-Indian Institute of Integrative Medicine, Jammu

[2]Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201002, India,

[3]Plant Science and Agrotechnology Division, CSIR-Indian Institute of Integrative Medicine, Jammu.
***Corresponding author**: diksharani502@gmail.com

Natural products are known to modulate immune system; a lot of plant-based principles have been identified and isolated with immunomodulation activities which justify their use in traditional folkflore medicines. *T. cordifolia*, (Amrita or Guduchi) one of the safe Ayurveda herbal medicines, has been recommended and is used widely by the Indian population to improve immunity during the pandemic. *T. cordifolia* are capable of inhibiting the SARS-CoV-2 main protease with high binding efficiency. Traditionally it has been used in the treatment of cold, fever (viral), urinary problem, dysentery, skin diseases etc. The pharmacological activities reported for its different extracts includes antioxidant, antimicrobial, antibacterial, antifungal, anticancer, HIV-potential, antitoxic, antioxidant, antistress, wound healing, immunomodulating. These biological activities may be due to presence of some complex alkaloids. In the present Investigation we have carried out isolation and standardization of major bioactive fractions using isolated marker compounds. So far, we have isolated 22-compounds including 3 new using column chromatography, HP/LC and other isolation techniques. Among known compounds 8-Hydroxy tinosporide, Syringin, Tinosporicide, some alkaloids like Berberine, Isocolumbin, Magnoflorine and Tinocordiside. All isolated compounds were characterized by using spectroscopic techniques like NMR (1D and 2D) and HRMS. Further alkaloids like Berberine, Isocolumbin, Magnoflorine and Tinocordiside are reported to have high binding affinity against variant of SARS-CoV-2 strains so we are focused for isolation of more potent and novel compounds having antiviral activities.

JH/IASTAM2022/PP36

Past, present and future of Nutraceuticals: A market based systemic analysis

Drishti Maheshwari*, Yogesh Godiyal, Arya Lakshmi Marisetti, and Devesh Tewari

Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Sciences, Delhi Pharmaceutical Sciences and Research University, New Delhi 110017, India
***Corresponding author**: drishtimaheshwari997@gmail.com

The nutraceuticals have emerged as one of the most potential markets globally. Major trends that drive the nutraceutical industry in much more popularity are rise in chronic and communicable disease, increasing health care cost, and mistrust in conventional medicines among others. Various health benefits for which many nutraceutical formulations are claimed including improved bone health, enhanced physical strength and immunity, maintaining beauty, enhancing physical performance in sports and bodybuilding. The present study is designed to evaluate the cost benefit analysis and understanding of nutraceutical market trends. The present global and Indian market trends are also evaluated. A systematic study on nutraceutical products and market trends was performed. We reviewed various nutraceutical products of natural origin and their market trends. PubMed, ScienceDirect and Scopus were searched through Boolean information retrieval method using appropriate keywords. It has been speculated that around 7% growth augmentation in 2019-2024 period in nutraceutical market. The total revenue generated through export of nutraceuticals in 2018 is around 330 million USD. In 2020, the global market for nutraceutical was worth US$233.9 billion and projected to reach US$358.5 billion by 2027. India's present share in the global nutraceutical market is around 2% which is expected to grow to newer heights in upcoming years. Research and development in this sector is need of the hour and will allow more compliant formulations and discovery of more possible nutraceuticals.

JH/IASTAM2022/PP37

Antioxidant effect and in vivo cardio protective study of quince (*Cydonia oblonga*) fruit juice

Entesar Hanan[1*], Farhan J Ahmad[2], Vasudha Sharma[1]

[1]Department of Food Technology, SIST, Jamia Hamdard, New Delhi, 110062

[2]Department of Pharmaceutics, SPER, Jamia Hamdard, New Delhi, 110062
***Corresponding author:** entesarhanan@yahoo.in

Quince (*Cydonia oblonga*) is an underutilised fruit which is promulgated to have an immense medicinal potential. The current study was aimed to explore the cardio protective effect of quince fruit juice. The freshly obtained quince juice was found to be a rich source of vitamin C (39.01mg/100ml), A, B1, B2 and B3 (43.07, 68.0, 18.0, 21.0 µg/ml) and minerals such as Fe, Na, K, Ca, Mg, P (72.31, 88.63, 5103.10, 951.37, 61.39, 98.25 ppm). The phyto-chemical compounds identified in quince juice were malic acid (161.51 µg/ml), quinic acid (246.02 µg/ml), kaempferol 3-O- glucoside (651.02 µg/ml), kaempferol 3-O-rutinoside (652.34 µg/ml), quercetin (726.02 µg/ml), quercetin 3-O-rutinoside (803.13 µg/ml) and 5-O-caffeoyl quinic acid (98.02 µg/ml) which are all cardio protective in nature. The in vitro assay showed significant ($p<0.001$) antioxidant potential. Additionally the in-vivo study was done on wistar rats to ascertain that whether pre-treatment of quince fruit juice has any protective effect against the Doxorubicin (DOX) induced cardio toxicity. The treated group showed a significant decrease in serum CK-MB, AST ($p<0.05$), and a significant increase in the level of GSH ($p<0.001$) and decrease in MDA level ($p<0.05$) as compared to the untreated group. The histopathological study showed the protection against myocardial toxicity induced by DOX.

JH/IASTAM2022/PP38

Ethnobotany and pharmacognosy of Gokhru Kalan (*Pedalium murex* Linn.): A comprehensive review

Faiza*, Faraha Ahmad, Mohammad Aslam

Department of Ilmul advia, School of Unani Medical Education and Research, Jamia Hamdard, New Delhi
***Corresponding author**: 7048986942, faizasiddiqui19@gmail.com

Gokhru Kalan is rich source of many bioactive compounds that have been investigated pharmacological for large number of pathological disorders. Researches have established it as a treasured plant owing to it numerous benefits. *Pedalium murex* Linn. (Pedaliaceae) also known Large Caltrops. It is a glabrous annual succulent herb found in Southern part, Deccan region of India and in some parts of Ceylon as a weed of waste places. It is generally called Brihata Gokshur, Bara Gokhru, Dakshini Gokshur, Khaar-e-Khasak Kalaan/khurd, Gokhru Kalaan. Its major phytochemical constituents include diosgenin and vanillin. Stem contains phytosterols, saponins, tannins and carbohydrates while roots are hub for reducing sugars, xanthoproteins, saponins, alkaloids, triterpenoid, flavonoids and phenolic compounds while leaves contain alkaloids, resins, flavonoids, saponins, proteins and steroids. The fruits are rich source of stigmasterol, flavonoids, alkaloids, glycosides, stable oil, resins, aromatic oil, triterpenoid, carbohydrates amino acids and phenols. Its various parts are used to treat several ailments such as piles, leprosy, painful gums, cough, asthma, pain, skin diseases, heart troubles, stomachic, appetizer, emmenagogue, vesicular calculi, antiseptic, reproductive disorders, impotency in men, leucorrhoea in women, gonorrhoea, urinary track disorder as well as gastrointestinal disorders. The plant has been investigated pharmacologically to treat wide range of ailment which are either acute or chronic in nature like antiulcerogenic, nephroprotective, hypolipidemic, aphrodisiac, antioxidant, antimicrobial and insecticidal activities. Though newer formulations for better therapeutic effect and or more economical value are needed.

JH/IASTAM2022/PP39

Exploring potential neuroprotective marine compound for treatment and management of different brain disorders through in silico study

Faizan Ahmad*

Department of Medical Elementology and Toxicology, Jamia Hamdard, Delhi, 110062, India
***Corresponding author**: 9523395056, 1996faizanahmad@gmail.com

Alzheimer's disease (AD), Glioblastoma multiforme (GBM), Amyotrophic lateral sclerosis (ALS) and Parkinson's disease (PD) are just a few of brain disorders that people today face. The most common form of dementia; AD affects about 30 million individuals worldwide. The loss of dopaminergic neurons in the substantia nigra of the basal ganglia contributes to the development of PD. In addition, ALS is a type of progressive neurodegenerative disorder pointing to the dysfunctionality of motor neurons and uncoordinated body movements. Furthermore, GBM is one of the most frequently occurring, highly malignant brain tumors. It has been classified as Grade IV, the highest-grade brain tumor by WHO (World Health Organization). So, we need to find novel compounds for treatment and management of all fatal disorders. The aim of the study to find a novel neuroprotective marine compound which is effective in all four disorders. In this study we collected 50 marine compounds and performed an ADMET analysis from which 30 compounds follow Lipinski's rule. Ligand docking was performed after ADMET analysis for AD, GBM, ALS and PD in which we took three protein targets, respectively. We further performed molecular dynamic simulation with triplicate run at 100ns to validate our simulation result. We found Dioxinodehydroeckol as the most novel marine compound which effective on four disorder even it is blood brain barrier permeable and during docking binding affinities with AD, GBM, ALS and PD is -11.1, -8.8, -10 and -10.2. Finally, we reach to conclusion that DHE is the most promising marine compound which is effective in AD, GBM, ALS and PD and it can be further used for pre-clinical (in vitro and in vivo) and clinical trials as it can be a multi-target drug as it shows a very impressive result during molecular docking and dynamics studies

JH/IASTAM2022/PP40

Utilization of psyllium husk in development of dietetic cookies

Faraz Ahmad[1], Sayeed Ahmad[1,2,3*]

[1]Department of food technology, SIST, Jamia Hamdard, New Delhi-110062, India

[2]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi -110062

[3]Centre of Excellence (CoE) in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi-110062, India
***Corresponding author**: sahmad_jh@yahoo.co.in, 9891374647

The incorporation of fibers or hydrocolloids produces changes in food formulation. The soluble fiber found in psyllium husks can help lower cholesterol. Psyllium can help relieve both constipation and diarrhea, to treat irritable bowel syndrome, hemorrhoids, and other intestinal problems. Psyllium has also been used to help regulate blood sugar levels in people with diabetes. In this study, an attempt has been made to develop dietetic cookies in corporation of psyllium husk to enhance their nutritional value as a functional food. The cookies were prepared by the mixing of composite flour, Psyllium husk, salted butter, sugar, Milk powder, Cardamom powder, Baking powder in desired proportion. The physicochemical and phytochemical analyses were performed to evaluate its various quality parameters. The moisture, ash, protein, fat, carbohydrate, calorific value of the cookies were to found to be 3.695%, 2.851%, 7.923%, 23.14%, 37.90%, 391.55 KCal respectively. The physical parameter of the cookies were observed as Diameter 50.5mm thickness 7.3mm spread ratio 6.91mm bake loss 8.58 % respectively. The free DPPH radical scavenging potential (%) 55.45b±b0.88 (1000 µL/mL). The production of cookies enriched with psyllium husk can be considered as an alternative way to include this health promoting fiber in human nutrition. Dietary fibers from psyllium husk have been used extensively both as pharmacological supplements and food ingredients and in processed food. After reviewing and summarizing from the above study, it can be concluded that the psyllium possesses the dual potential in pharmaceuticals. Initially, its use was limited as a natural drug but due to its high fiber content, it was utilized as nutraceuticals food products as in dietic cookies for improving and boosting digestive process as well as improving bowel function.

JH/IASTAM2022/PP41

Development of monograph, chemoprofiling and network pharmacological studies of a nephroprotective formulation: Majun Kundur

Sultan Zahiruddin[1,2], Yaseera Arif[1,2], Afifa Khanam[1,2], **Fariha Kamal Kabir**[1,2], Sayeed Ahmad[2*]

[1]Bioactive Natural Product Laboratory, SPER, Jamia Hamdard, New Delhi, 110062, India

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi, 110062, India
***Corresponding author:** sahmad_jh@yahoo.co.in

Majoon Kundoor is a Unani formulation primarily used for the treatment of frequent urination. It gives strength to urinary bladder muscles and is also used for the treatment of ailments such as lung diseases, haemorrhoids, rheumatism, and urinary dysfunctions in Unani system of medicine since ancient time. The aim of this study was to chemoprofiling and establish network pharmacology of nephroprotective formulation Majoon Kundoor. Preliminary pharmacognostic evaluation and monograph of Majoon Kundoor was developed as per Unani Pharmacopoeia standards. Methanolic extract was prepared using ultra sonication method. The prepared extract was subjected to determination of total phenolic and flavonoid content. Qualitative estimation was carried out using preliminary phytochemical screening and TLC fingerprint whereas quantification of active biomarkers by HPTLC. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective biomarkers at molecular level. Complete monograph of Majoon Kundoor was developed as per Unani Pharmacopoeia standards. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram of gallic acid and quercetin respectively. The TLC profile was developed for identification, and quantification of active metabolites. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of metabolites and network was established. The conducted study was performed for standardization of the aforementioned formulation and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP42

Application of hot medicated fomentation for pain alleviation in non-specific low back pain - A randomized controlled clinical trial

Fatima Khan[1*], Anwar Husain Khan[2]

[1]Department of Ilaj Bit Tadbeer, Inamdar Unani Medical College & Hospital, Kalaburagi-585101, India

[2]Department of Munafeul Aza (Physiology), School of Unani Medical Education and Research, Jamia Hamdard, New Delhi-110062, India
***Corresponding author:** 9354137383, drfatimakhan021@gmail.com

Non-specific low back pain is a leading contributor to disease burden and works absenteeism worldwide with a lifetime prevalence of 60–70% in industrialized countries. A half-baked medicated bread (*khubz*) prepared with a few *Unani* herbal drugs was used for hot fomentation to alleviate pain and disability in non-specific low back pain. In this randomized-controlled study, fifty-four patients were randomly assigned into two groups to receive hot fomentation (*Takmīd-e-haar*) with half-baked medicated bread and hot water bag fomentation, on the lumbosacral region daily for 30 minutes for 15 consecutive days. Patients were assessed statistically using the visual analog scale (VAS) and Oswestry disability index (ODI) at baseline, 7th and after treatment (15th day). Only forty patients completed the duration of the study protocol and hence were restricted to the statistical analysis. After the intervention, statistically significant improvements ($p<0.001$) were observed in VAS and ODI scores in both the groups on the intragroup comparison. The test group showed better efficacy in comparison to the control group with a mean difference of 1.75 and 8.20 in VAS ($p<0.0001$) and ODI ($p=0.001$), respectively. The tested intervention showed significantly better efficacy in comparison to the hot water bag fomentation probably due to the analgesic (*musakkin-i-alam*), anti-inflammatory (*muḥallil-i-awrām*), and demulcent (*mulaṭṭif*) properties of the ingredients of tested *Unani* formulation in addition to the effects of heat. It may therefore be concluded that medicated fermentation is an effective, safer, feasible, and less expensive regimen for patients with non-specific low back pain.

JH/IASTAM2022/PP43

The Sunna food that heals and boosts immunity

Fazal Ahmed

Saba Poliy Clinic and Saba Remedies, Chandryangutta, Hyderabad, Andhra Pradesh
***Corresponding author:** drfazalmastan@gmail.com

The types of food mentioned in Holy Ahadith (SAS) doesn't only heal the different ailments in human beings but also act as immunity boosters as well as natural nutrition supplements which is extremely useful in our day-to-day lives. These includes Talbinah, Sattu, Nabees and also Sirka (vinegar) and Murbah of behi (safarjal) and so on. The forementioned foods will be discussed in detail with their nutritional values and uses, and the way in which they treat different kinds of ailments.

JH/IASTAM2022/PP44

Development of monograph, chemoprofiling and network pharmacology studies of a nephroprotective plant: *Coriandrum sativum*

Sageer Abass[1], **Fizza Sayeda Zaidi**[1,2], Fatin Hilal[1,2], Sayeed Ahmad [1,2*]

[1]Bioactive Natural Product Laboratory, SPER, Jamia Hamdard, New Delhi, 110062, India

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi, 110062, India
***Corresponding author**: sahmad_jh@yahoo.co.in

In Unani system of medicine, Coriandrum sativum (Dhaniya) has been scriptured as a potent nephroprotective agent. The major chemical constituents found in Gymnena sylvestre are linalool, α-pinene, camphor, limonene, geranyl acetate, p-cymene, petroselinic acid, palmitic acid. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per the USP standards. Methanolic extract of powdered drug was prepared and subjected to determination of total phenolic and flavonoid contents. Qualitative estimation was carried out using preliminary phytochemical screening and TLC fingerprinting whereas, quantification of the active biomarkers by HPTLC. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. In silico network-pharmacology was carried out to determine the nephroprotective biomarkers at molecular level. Complete monograph of the nephroprotective plant Coriandrum sativum was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram of gallic acid and quercetin respectively. TLC profile was developed for identification and quantification of active metabolites was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. In silico studies reflected nephroprotective effect of metabolites and network was established. The conducted study was performed for standardization of the aforementioned plant and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP45

Pharmaceutical standardization of *Draksharista* prepared by two different species of *Draksha* (*Vitis vinifera* L. and *Vitis labrusca* L.) and their comparative efficacy on *Agnibala* - an open label randomized clinical trial

Ganesh Ananda Tambe*

R.V. Northland Institute, G.B. Nagar Dadri
***Corresponding author**: tambeg13@gmail.com, 9552814379

Agni is having prime importance in healthy individual as any disturbance in *Agni* can lead to diseases. According to ayurveda *Agni* is root for all the Diseases. *Draksharista* is the effective compound formulation of the drug *Draksha*, along with several potent drugs like *Pippali*, *Priyangu*, *Maricha*, etc. *Draksharista* is indicated in *Urakhsat*, *Kasa* (cough) *Shwasa* (dyspnea) *Galaroga* (Disease of throat) and also said to be *Malakruta Balashodhana.* Aim: Is there any difference in pharmaceutical, analytical and clinical profile of *Draksharista* prepared by using *Vitis vinifera* L. and *Vitis labrusca* L. The proposed study aimed to analyze two sample in terms of their pharmaceutical and analytical parameters and to compare *Agnibala vardhana* effect of two samples on Healthy volunteers. Firstly, *Draksharista* was prepared by using reference of Sharangdhara Samhita by using *Vitis vinifera* L. and *Vitis labrusca* L. followed by analyze them on organoleptic parameters, Physico-chemical parameters and sophisticated analysis. The clinical study was conducted on apparently healthy volunteers. The *Draksharista* prepared by using *Vitis vinifera* L. and *Vitis labrusca* L. significantly improves Agnibala of healthy volunteers in 28 days.

JH/IASTAM2022/PP46

Multiplicity of targets exhibited by a colloidal nano-silver formulation (Silversol®) against antibiotic-resistant bacterial pathogens

Gemini Gajera[1], Chhaya Godse[2], Anselm DeSouza[2], Dilip Mehta[2], Vijay Kothari[1*]

[1]Institute of Science, Nirma University, Ahmedabad- 382481, India
[2]Viridis BioPharma Pvt Ltd, Mumbai, India
***Corresponding author**: vijay.kothari@nirmauni.ac.in

Silver has been an important ingredient of many Traditional Medicine formulations. However, the mechanistic details of its antimicrobial action yet has not been known fully. The aim of this study was to investigate the molecular mechanisms underlying the antibacterial activity of silver. Effect of silver was investigated on bacterial growth and on certain virulence traits through broth dilution assay, while the mechanistic details were elucidated through whole transcriptome analysis. Silver exerted effect on bacterial growth, quorum-sensing, haemolytic potential, and antibiotic susceptibility. It influenced expression of 0.62% and 3.32% of genome in *Pseudomonas aeruginosa* and *Staphylococcus aureus*. Major targets of silver in *P. aeruginosa* seems to be iron homeostasis and nitrogen metabolism. In *S. aureus*, a large number of structural as well as functional genes (e.g. transport, enzymes) appears to be targeted by silver. Silversol® also exhibited notable anthelmintic activity at ppm concentrations. Colloidal silver attacks multiple targets in the susceptible bacteria, which needs to be subjected for further validation in antibiotic-resistant bacterial pathogens. Thus, identified potential novel targets may prove quite useful for novel antibiotic discovery programmes.

JH/IASTAM2022/PP47

Synthesis, ADMET studies and *in silico* docking analysis of piperic acid based derivatives as fab I inhibitors

Gowsia Akhter[1]*, Bharti, M S Alam[1], Hinna Hamid

Department of Chemistry, School of Chemical and Life Sciences, Jamia Hamdard, New Delhi-110062
***Corresponding author**: 9682507132, gowsiasalman@gmail.com

Enoyl acyl carrier protein reductase (ENR), also known as fab I is one of the key components of the FAS II system. ENR completes the fatty acid chain elongation cycle by catalyzing the stereospecific reduction of the double bond between positions C2 and C3 of a growing fatty acid chain. Black pepper (Piper nigrum L.) has long been regarded as a spice added to many foods and is also considered as a medicinal plant. Piperic acid is synthesized by the acidic/basic hydrolysis of piperine. Its derivatives possess various biological activities including anti-bacterial, anti-tubercular, anti-fungal, anti-microbial, anti-protozoal and anti-viral activities. New types of piperic acid derivatives synthesized with potent antibacterial activity. Present work explains Synthesis and *In Silico* docking analysis of piperic acid derivatives as fab I inhibitors. The docking analysis of newly synthesized piperic acid based derivatives was done against fab I target with a synthetic co-crystallized ligand (PDB No. 4NZ9) using Schrodinger version of 9.6 software. The desired compounds synthesized by different substituted thiosemicarbazides. The target compounds characterized by mass spectroscopy and proton NMR analysis.

In- silico docking analysis and ADMET studies of a library of compounds was performed to assess their interactions with the target at molecular level and it was found that the molecules showed favorable binding interactions with the target and good glide scores with respect to triclosan a known inhibitor of Fab I. The crystal structure of the fab I enzyme in complex with piperic acid based compounds bound with NADH reveals that the compounds bind to the substrate in a unique conformation that is distinct from the binding motif of other known fab I inhibitors.

JH/IASTAM2022/PP48

Impact of pelvic floor exercises in 42 years old type 2 diabetic female with l5-S1 disc herniation and urinary incontinence: A case study

Habiba Sundus[1], Sohrab Ahmad Khan[2]

Department of Physiotherapy, Jamia Hamdard, New Delhi
***Corresponding author**: habibaqureshi51@gmail.com

Diabetes mellitus is one of the major health concern worldwide. In diabetes, the condition of excessive blood sugar levels can lead to long-term damage, dysfunction and failure of various organs, especially feces, kidneys, nerves, heart, and blood vessels. Urinary incontinence can also be associated with diabetes mellitus. In this study, a 42-year-old woman presented with type 2 diabetes mellitus complaint associated with lower back pain and urinary incontinence. MRI finding shows disc bulge at L5-S1.Two weeks of therapy was given to the patient. Physical therapy protocol includes Kegel's exercises, Stretching exercises, postural advice, gait training, and a home program to training for the activity of daily living activities. The patient reported reductions in symptoms in the Pelvic Floor Impact Questionnaire (PFIQ-7) at the end of her sessions, and was able to resume activities that she had not previously tolerated due to back pain and urinary incontinence.

JH/IASTAM2022/PP49

Development of monograph, chemoprofiling and network pharmacology studies of a nephroprotective plant: *Gymnena sylvestre*

Sageer Abass [1], Nooreen Ali Nizami[1,2], **Hafsa Junaid**[1,2], Sayeed Ahmad[2*]

[1]Bioactive Natural Product Laboratory, SPER, Jamia Hamdard, New Delhi, 110062, India

[2]Centre of E xcellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi, 110062, India
***Corresponding author:** sahmad_jh@yahoo.co.in

In Unani system of medicine, Gymnena sylvestre (gurmar) has been scriptured as a potent nephroprotective agent. The major chemical constituents found in Gymnena sylvestre are Gurmarin, Gymnemic acids, Gymnemasaponins, Stigmasterol, Stigmasterol, Oleanane, Dammarane, Anthraquinones, Cardiac glycosides, Eicosane and Oleic acid. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per the USP standards. Methanolic extract of powdered drug was prepared and subjected to determination of total phenolic and flavonoid contents. Qualitative estimation was carried out using preliminary phytochemical screening and TLC fingerprinting whereas, quantification of the active biomarkers by HPTLC. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. In silico network-pharmacology was carried out to determine the nephroprotective biomarkers at molecular level. Complete monograph of the nephroprotective plant Gymnena sylvestre was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram of gallic acid and quercetin respectively. TLC profile was developed for identification and quantification of active metabolites was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. In silico studies reflected nephroprotective effect of metabolites and network was established. The conducted study was performed for standardization of the aforementioned plant and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP50

Importance of *Woodfordia fruticosa* in the preparation of Ayurvedic medicines

Haseena Shafeeq[1], Hema Kumari[1,2], Nitika Sharma[1,2], Vikash Babu[1,2]*

[1]Fermentation and Microbial Biotechnology Division, CSIR-Indian Institute of Integrative Medicine, Canal Road, Jammu-180001, India

[2]Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, India-201002
Corresponding author: vikash@iiim.res.in

Woodfordia fruticosa is a herb which belongs to the family Lytharaceae and is found in tropical and sub-tropical regions. This plant is commonly known as dhataki. Its flowers have great importance in the preparation of Ayurvedic formulations namely asavas and arishtas, as it contains yeasts which is required for the generation of alcohol through fermentation. Further, the dried flowers of this plant are used in the treatment of dysentery, diarrhoea, liver diseases, wounds, burning sensations, skin diseases, fever, etc. Also, many important chemical compounds have been reported from *Woodfordia* flower i.e., flavonoids, tannins and polyphenols which have anti-tumor and anti-inflammatory activities. Extract of this plant mainly the leaves and flowers have an important role in the pharmacological activities.

JH/IASTAM2022/PP51

Medicinal value of AYUSH Kwath formulation

Hema Kumari[1,2], Haseena Shafeeq[1], Nargis Ayoub Bhat, Vikash Babu[1,2]*

[1]Fermentation and Microbial Biotechnology Division, CSIR-Indian Institute of Integrative Medicine, Canal Road, Jammu-180001, India

[2]Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, 201002, India
***Corresponding author**: vikash@iiim.res.in

Ayush Kwath is a herbal concoction that boosts immunity and guards the body against numerous illnesses. *Ocimum sanctum* Lf. (4g), *Cinnamomum zeylanicum* St. (2g), *Zingiber officinale* Rz. (2g), and *Piper nigrum* Fr.(1g) are the four herbs that make up this herbal mixture. Among these herbs, *Cinnamomum zeylanicum* is used to treat gastrointestinal disorders, diarrhoea, and bacterial infections, while *Zingiber officinale* and *Piper nigrum* have been shown to have antibacterial, antifungal, anti-apoptotic, antidepressant, anti-inflammatory, and anti-diarrheal properties. *Ocimum sanctum* is used to treat bronchial asthma, malaria, diarrhoea, and skin conditions. Based on this, the review's main objective is to examine the significance of the ayush kwath formulation's medicinal value.

JH/IASTAM2022/PP52

Chromatographic analysis and exploitation of traditional UNANI formulation for nonalcoholic fatty liver disease.

Iftekhar Ahmad[1], Washim Khan, Sayeed Ahmad*

Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, Faculty of Pharmacy, Jamia Hamdard, New Delhi 110062
***Corresponding author:** 9891374647; sahmad_jh@yahoo.in

Arq-e-Mako (AeM) and Arq-e-Kasni (AeK) are two liquid formulations of the the Unani system of medicine and used since long for the management of liver disorders. The study was carried out to provide a scientific basis for their traditional claims. AeM and AeK formulations have been prepared as water distillate of fruits of *solanum nigrum* Linn. and *Cichorium intybus* linn. respectively as per National formulary of Unani Medicine. The metabolic profiling of nonpolar component was carried out using GC-MS on HP-5 MS capillary column. Similarly HPTLC profiling of Arq,s was performed using toluene : ethyl acetate : formic acid : methanol (4:3:0.5:1, v/v/v/v) as a solvent system. The stability analysis of Arq,s in terms of their metabolite content was evaluated at room (25±2°C) and in the refrigerator (4±2°C) by sampling at regular intervals up to three month to set up its storage conditions. The efficacy of Arq,s on high fat diet induced (HFD) non alcoholic fatty liver disease (NAFLD) has been checked on C57BL/6 mice. The free fatty acid of serum was estimated through GC-MS followed by histopathology. The in silico screening of major metabolites of Arq,s were carried out to check their affinity. The results of in vitro, in silico and in silico analysis for Arq-e-mako and Arq-e-kasni provide a strong scientific base for its traditional claim. Quality control analysis using HPTLC and GC-MS give an insight and metabolomics profiling including pattern recognition in plasma which may be explored for development of molecular and mechanistic data for its use and as well as for quality control. In our opinion, the quality controlled aromatic water has a great future for disorders of the liver, which has rare medicine in a modern system.

JH/IASTAM2022/PP53

Evaluation of relationship of physical fitness index with Mizaj in young individuals

Iqra Hashmi

Ayurvedic & Unani Tibbia College and Hospital, Karol Bagh, New Delhi
Corresponding author: iqrahashmi1702@gmail.com

Mizaj concept in the Unani system of medicine is a wide area of research. Mizaj theory has its roots in the ancient four humors theory. It was the Greek physician Buqrat (Hippocrates 460-370 BC) who systematized and developed it into a medical theory. He believed certain human moods, emotions, and behaviors were caused by body fluids (called "Humor"): blood, yellow bile, black bile, and phlegm. So, it is necessary to find out its relationship with physical fitness which may be influenced by individual mizaj (body type) and it can be considered as a decisive advantage to selecting an appropriate exercise for each athlete. Research in this area is very scanty and inconclusive, therefore the participants of young age and clinically healthy have been chosen as the subject of study. The objective of the present study is to find out the nature of mizaj (body type) with physical fitness. The sample of the present study was drawn from Ayurvedic and Unani tibbia college students, both boys and girls. In the present study, mizaj was assessed by using a mizaj assessment questionnaire based on ten classical parameters described in the Unani classical literature category, and physical fitness was determined by physical fitness index(PFI) using a modified Harvard step bench test. Analysis of data in the current study was done by calculating the mean, standard deviation, and one-way ANOVA in SPSS 22.0 software for all the factors of mizaj and physical fitness. It is observed that PFI, is highest in people having Damvi Mizaj and lowest in people having saudavi Mizaj and it is in concordance with the experimental hypothesis of this research work. From this study, it is clear that a possible correlation between PFI and Mizaj certainly does exist. After that, PFI could be considered as one of the diagnostic indices of temperament.

JH/IASTAM2022/PP54

Development of monograph, chemoprofiling, and network pharmacology studies of a nephroprotective plant: *Vetiveria zizanioides* (L.)

Mohammad Irfan[1], **Iqra Malik**[1], Sayeed Ahmad[1,2*]

[1]Bioactive Natural Product Laboratory, SPER, Jamia Hamdard, New Delhi, 110062, India

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia
Hamdard, New Delhi, 110062, India
***Corresponding author**: sahmad_jh@yahoo.co.in

In Unani system of medicine, Vetiveria zizanioides (L.) Nash (Family: Poaceae) has been knoun as a potent nephroprotective agent. The major chemical constituents found in Vetiveria zizanioides (L.) are β-vatirenene, γ-cadinene, α-calacorene, β-vetispirene, zinigiberene, isokhusenic acid. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and a monograph was developed as per USP standards. The methanolic extract was prepared using the ultrasonication method. The prepared extract of Vetiveria zizanioides was subjected to the determination of total phenolic (Folin-ciocalteu method) and flavonoid content (aluminium chloride method). Further qualitative and quantitative estimation was carried out by developing a TLC fingerprint profile and quantification of active biomarkers. High throughput bioautographic determination was carried out for the identification of antioxidant compounds using DPPH. In-silico network pharmacology was carried out to determine the nephroprotective potential at a molecular level. Complete monograph of the nephroprotective plant Vetiveria zizanioides was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram of gallic acid and quercetin respectively. TLC profile was developed, and quantification of active biomarkers was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. In silico studies reflected the nephroprotective protective effect of the plant and molecular level and network was established. The conducted study was performed for standardization of the aforementioned plant and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP55

Development of monograph, chemoprofiling and network pharmacology studies of a nephroprotective plant: *Henna* (Unani name of plant/formulation)

Zoya Malik[1,2*], **Iqra Yasmeen[2]**, Iqura Abdullah[2], Jyoti Kumari Sah[2], Sayeed Ahmad[2*]

[1]Department of Biosciences, Jamia Millia Islamia, New Delhi 110025

[2]Bioactive Natural Product Laboratory, Department of Pharmacognosy & Phytochemistry, SPER, Jamia Hamdard, New Delhi, 110062
***Corresponding author**: Phone: 9891374647, sahmad_jh@yahoo.co.in

The use of *lawsoina inermis* L.(henna) for medicinal and cosmetic purposes is inextricably linked to ancient and modern cultures of North Africa and Asia. It is mentioned as nephroprotective plant in Unani system of medicine. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per USP standards. Methanolic extract was prepared using ultrasonication method. The prepared extract was subjected to determination of total phenolic (Folin-ciocalteu method) and flavonoid content (Aluminium chloride method). Further, qualitative and quantitative estimation was carried out by developing a TLC fingerprint profile and quantification of active biomarkers. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective potential at molecular level. Complete monograph of the nephroprotective plant lawsoinia inermis was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram gallic acid and quercetin respectively. TLC profile was developed and quantification of active biomarkers was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of the plant at molecular level and network was established. The conducted study scientifically validates the traditional knowledge of nephroprotective potential of the aforementioned plant/formulation and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP56

Analytical method development and validation of lomustine by high performance liquid chromatography

Iram Khan*, Yasmin Sultana

Department of Pharmaceutics, SPER, Jamia Hamdard University, New Delhi
Corresponding author: iramaliyakhan@gmail.com

An experimental design was employed to develop new RP-HPLC methods for the quantitative determination of Lomustine and the assay methods have been validated as per ICH guidelines. Several chromatographic factors were considered for the optimization. Different systems of mobile phases were listed and the best resolution was achieved using acetonitrile - water in the ratio of 50:50 v/v as the mobile phase on an Agilent 1200 series HPLC system C18 (250 mm x 4.6 mm x 2.5 µ) column packing by using isocratic mobile phase consisting of acetonitrile: water (50:50 v/v), with flow rate of 1.0 ml/min for 15.0 min run time at a fixed wave length of 230 nm. The results were subjected to linear regression analysis. A system suitability test was performed to evaluate the chromatographic parameter before the validation run. The accuracy was studied by the standard addition technique. The percentage recovery of Lomustine was 98.33. The LOD & LOQ for Lomustine was 22.5 and 88.2 respectively. Under optimum formulation condition, baseline of Lomustine with minimum resolution of 2.0 and run time of less than 15.0 min was achieved. An optimized formulation assay condition for Lomustine showed higher sensitivity and shorter analysis time (6.25min) than the earlier published reports. The RSD values for all parameters were found to be less than 2, which indicate the validity of method and results obtained by this method is with fair agreement and the results indicate that the method is specific and robust.

JH/IASTAM2022/PP57

Characterization, preparation and evaluation of dual drug loaded nanoliposomes of pregabalin with phytobioactive constituent of *Piper longum* for intranasal delivery

Isha Gupta[1], Syeda Nashvia Adin[1], Mohd. Mujeeb[1*], Mohd. Aqil[2], Mohd. Akhtar[3]

[1]Phytomedicine Laboratory, Department of Pharmacognosy & Phytochemistry, School of Pharmaceutical Education & Research, Jamia Hamdard, New Delhi, India-110062

[2]Department of Pharmaceutics, School of Pharmaceutical Education & Research, Jamia Hamdard, New Delhi, India-110062

[3]Department of Pharmacology, School of Pharmaceutical Education & Research, Jamia Hamdard, New Delhi, India-110062
***Corresponding author:** mmujeeb@jamiahamdard.ac.in, 9212050090

Combinational drug therapy is becoming more popular for the treatment of various CNS related disorders by providing synergistic drug effects, reducing drug toxicity, and overcoming multidrug resistance. In recent years, nanocarriers-based delivery of combinational drugs emerged out as an effective approach for delivering the combinational drugs, among which liposomes have been extensively exploited for improved therapeutics efficacy. The present research work designed to prepare and optimize dual-drug loaded nanoliposomes of Pregabalin with Phytobioactive constituent of *Piper longum.* The nanoliposomes were prepared by thin film hydration method and optimized using 3-factors at 3- levels Box-Behnken design.The effect of independent variables was taken as Phospholipon 90 G (X_1), cholesterol (X_2), sonication time (X_3) and their individual as well combined effects were observed on vesicle size (Y_1), entrapment efficiency (Y_2), and *in-vitro* release (Y_3). The optimized formulation was further characterized for drug release, DPPH assay, confocal laser scanning microscopy (CLSM), and ex-vivo permeation study. PRG-PIP-NLop depicted the vesicle size of 153 nm, PDI (0.16), entrapment efficiency of 79.22 ± 0.93% and drug release of 84.41 ± 3.34%. A better antioxidant activity of 89.27% was found as compared to standard ascorbic acid. Ex-vivo permeation studies showed significantly enhanced permeation from PRG-PIP-NLop (75.02 ± 2.05%) than PRG-PIP suspension (34.56 ± 1.73%). Further, the CLSM image of the nasal mucosa suggested rhodamine B loaded PRG-PIP-NLop showed better penetration as compared to control (rhodamine B- solution). From all experimental data, it was concluded that PRG-PIP-NLop is a promising and effective formulation for intranasal delivery.

JH/IASTAM2022/PP58

Improvised Amphotericin B offers greater defence against murine visceral leishmaniasis and lower intrinsic toxicity

Ishrat Altaf[1], Fauzia Jamal[1], Ghufran Ahmed[2], Sheikh Asad[1], Hira Ahmad[3], Qamar Zia[4], Asim Azhar[1,5], Saba Farheen[1], Taj Shafi[6], Swaleha Zubair[7], Mohammad Owais[1*]

[1]Interdesciplinary Biotechnology Unit, [3]Department of Zoology, [7]Department of Computer Science, Aligarh Muslim University, Aligarh, 202002, India

[2]Department of Microbiology, [6]Department of Molecular Biology, Rajendra Memorial Research Institute of Medical Sciences, Patna, 800007, India.

[4]Health and Basic Science Research Centre, Majmaah University, Majmaah, 11952, Saudi Arabia

[5]Aligarh College of Education, Aligarh, 202122, India
***Corresponding Author**: mdowais2012@gmail.com, 7534049778

The free form of the polyene antibiotic amphotericin B (AmB) does not have the position of the drug of choice in clinical settings despite its remarkable efficacy in treating leishmaniasis as well as a variety of fungal infections. This may be mostly related to the main drug's high inherent toxicity. To reduce AmB's toxicity problems, the pharmaceutical industry has developed a variety of innovative dosage formulations. However, the constraints that still necessitate the development of an alternative dosage form for this essential medicine include the low manufacturing, high cost, necessity for a strict cold chain, and requirement for parenteral administration. We used a green method to fabricate AmB size since the size of a medicinal formulation is crucial for boosting the effectiveness of the core medication. The treated animals' pharmacokinetic responses to the synthesised AmB formulation are positive. By causing depolarization of the mitochondrial membrane potential $\Delta\psi_m$, our AmB formulation has been discovered to mostly cause necrosis-mediated cell death in *Leishmania donovani* (*L. donovani*) promastigotes. This finding is corroborated by an elevated ratio of PI+/AV+ and severe mitochondrial malfunction. Studies conducted in vivo show that the experimental animals' parasite burden has been decreased. The as-formed AmB formulation not only successfully suppresses *L. donovani* but also modifies the host immune system with predominant Th1 polarisation, an essential immunological defender that aids in the elimination of the intracellular parasite supported by the up-regulated expression of iNOS.

JH/IASTAM2022/PP59

Development of monograph, chemo profiling and network pharmacology studies of a nephroprotective plant: *Apium graveolens* (Tukhm-e-Karafs)

Parakh Basist[1,2], Jagriti Gupta[1], Mohammad Ikram[1], Md Umar[1], Sayeed Ahmad[1,2*]

[1]Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India-110062

[2]Centre of Excellence (CoE) in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi, India-110062
***Corresponding author**: 9891374647, sahmad_jh@yahoo.co.in

Tukhm-e-Karafs (*Apium graveolens*) is an important traditional plant in the Unani system of medicine due to its various pharmacological properties. In Unani, the seeds are used for treatment of various diseases including Sue Mizaj Jigar, Zofe Isteha, Yarqan, Sudda Jigar, Wajaulmafasil, Simane Mufrit, Sartan, Hisate Gurdah, Niqras, etc. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per the USP standards. Methanolic extract of powdered drug was prepared and subjected to determination of total phenolic and flavonoid contents. Qualitative estimation was carried out using preliminary phytochemical screening and TLC fingerprinting whereas, quantification of the active biomarkers by HPTLC. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. In silico network-pharmacology was carried out to determine the nephroprotective biomarkers at molecular level. Complete monograph of the nephroprotective plant *A. graveolens* seed was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram of gallic acid and quercetin respectively. TLC profile was developed for identification and quantification of active metabolites was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. In silico studies reflected nephroprotective effect of metabolites and network was established. The conducted study was performed for standardization of the aforementioned plant and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP60

A network pharmacology approach for alleviating Type 2 Diabetes Mellitus with bioactive compounds of *Lentinula edodes*

Jasmeet Kaur[1], Humaira Farooqi[2], Bibhu Prasad Panda[1]*

[1]Microbial and Pharmaceutical Biotechnology Laboratory, School of Pharmaceutical Sciences and Research, Jamia Hamdard, New Delhi, 110062, India

[2]Department of Biotechnology, School of Chemical and Life Sciences, Jamia Hamdard, New Delhi, 110062, India
***Corresponding author:** 9990335013, bppanda@jamiahamdard.ac.in

Lentinula edodes (Shiitake) exhibit variety of medicinal purposes in oriental medicine from Japanese and Chinese folk remedies. However, its bioactive constituents and mechanism(s) against T2DM have not been confirmed. Hence, we interpreted the bioactive compounds and mechanism(s) of *L. edodes* against T2DM through network pharmacology. This study aims to evaluate the possible molecular pathways of myco-chemicals from *L. edodes* against T2DM using network pharmacology. Compounds in *L. edodes* were explored through GC-MS and screened by Lipinski's rule. Genes associated with the selected compounds or T2DM were extracted from public databases, and the overlapping genes between *L. edodes* -compound related genes and T2DM target genes were identified using Venn diagram. Finally, the networking between selected compounds and overlapping genes was constructed, visualized, and analyzed by RStudio. GC-MS of *L. edodes* manifested 67 compounds and drug-like properties of these compounds were confirmed by Lipinski's rule. The 55-compound related genes and T2DM related genes (4,736) were identified, and 92 overlapping genes between them were extracted. The interactive network between compounds and overlapping genes were plotted and visualized by RStudio. According to pathway enrichment analysis, L. edodes' mechanism of action against T2DM involves inactivating metabolic pathways in order to inhibit gluconeogenesis. Besides, *L. edodes*' key signaling pathway for fighting type 2 diabetes may be PPAR signaling, which regulates adipocyte differentiation and enhances lipid metabolism and adipogenesis in adipocytes. These studies suggest that *L.edodes* may be useful in treating T2DM, and that these data illustrate the major chemical compounds and mechanisms which underlie *L. edodes*' ability to treat T2DM.

JH/IASTAM2022/PP61

Mucoadhesive drug carriers for the posterior ocular delivery of therapeutics

Jayamanti Pandit*, Yasmin Sultana

Research associate, Department of Pharmaceutics, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, 110062, India
***Corresponding author**: jayapandit@gmail.com

The conventional therapies for the treatment of posterior segment ocular diseases are not successful. The posterior site is the least accessible by the topical drug application. So it is a challenge to target the posterior site eye diseases in more effectively. The unmet need has promoted the development of novel drug delivery systems for sustained and prolonged release of the drug into the vitreous chamber and to the retina [1]. These drug delivery systems are tried to be administered by different routes like topical, systemic, periocular (subconjunctival, retrobulbar, peribulbar and sub-tenon) or intraocular (usually intravitreal)[2]. Diabetic retinopathy, a micro-vascular alteration in the retina resulted from long term diabetes mellitus is very common worldwide. Diabetic retinopathy not only affects the quality of the life but may cause permanent vision loss too[3]. The available treatments are invasive and associated with many challenges. Therefore to overcome these problems novel drug delivery carrier especially nanoparticles , nanogel, in situ gel etc are explored for the posterior ocular delivery[4,5]. Here I discuss special role of the mucoadhesve nanoparticles as an efficient drug delivery carrier for diabetic retinopathy. The penetration potential of mucoadhesive nanopartcles though the sclera by CLSM and concentration of the drug in the posterior ocular tissues in the animal model treated with the mucoadhesive formulation clearly showed the effectiveness of mucoadhesive nanoparticlee.

JH/IASTAM2022/PP62

Development of monograph chemoprofiling and network pharmacology studies of a nephroprotective plant *Kanwala* Unani name of plant formulation

Zoya Malik[1,2*], **Junaid Saifi[2]**, Mohd. Shariq[2], Karun Jain[2], Sayeed Ahmad[2*]

[1]Department of Biosciences, Jamia Millia Islamia, New Delhi 110025

[2]Bioactive Natural Product Laboratory, Department of Pharmacognosy & Phytochemistry, SPER, Jamia Hamdard, New Delhi, 110062
***Corresponding author**: Phone: 9891374647, sahmad_jh@yahoo.co.in

Nelumbo nucifera Gaertn (Family- Nymphaeaceae), mentioned in Unani medical system as a nephroprotective plant. It is an aquatic plant which is used as medicinal as well as for food. It is highly regarded as a sacred plant in some cultures. The proposed study aimed to develop monograph, chemoprofiling and establish network pharmacology of *Nelumbo nucifera.* Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per USP standards. Methanolic extract was prepared using ultrasonication method. The prepared extract was subjected to determination of total phenolic (Folin-ciocalteu method) and flavonoid content (Aluminium chloride method). Further, qualitative and quantitative estimation was carried out by developing a TLC fingerprint profile and quantification of active biomarkers. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective potential at molecular level. Complete monograph of the nephro protective plant *Nelumbo nucifera* was developed as per USP. Total phenolicand flavonoid content of the prepared extract was determined and was calculated per milligram gallic acid and quercetin respectively. TLC profile was developed and quantification of active biomarkers was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of the plant at molecular level and network was established. The conducted study scientifically validates the traditional knowledge of nephroprotective potential of the aforementioned plant/formulation and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP63

Pharmacokinetic profile and oral bioavailability of nimbolide: A review

Jyotika*

Birla Institute of Technology and Science, Pilani-Pilani Campus
***Corresponding author:** 7009578883, jyotikagautam1976@gmail.com

The relationship between human and his forage for drugs in nature dates from the far past. The knowledge of evolution of ideas associated with the consumption of medicinal plants have enhanced the ability of pharmacists to respond to various diseases. Nimbolide is a natural compound and is a promising anticancer agent. It is extracted from the *Azadirachta indica* popularly known as neem. A series of studies were accepted to search the pharmacokinetic properties and oral bioavailability of nimbolide. The databases used were Science Direct, Google Scholar, Elsevier, PubMed, books such as pharmacopeia and other textbooks. Original articles were included, and information was collected using keywords "*Nimbolide*", "Phytoconstituents", "Anticancer", "Bioavailability". Nimbolide inhibit cancer cell proliferation via numerous mechanisms. It is proapoptotic and can initiate both extrinsic and intrinsic pathways to produce apoptosis of cancer cells. Assessment of absolute bioavailability and pharmacokinetics of nimbolide was done and validated by LC/QTOF/MS method. Pharmacokinetic properties of Nimbolide in orally administered rats were characterized as very poor absolute bioavailability. It exhibited better pharmacokinetic properties when administered intravenously. This review summarizes the pharmacokinetic studies of nimbolide. Studies conclude that it is a potential anticancer agent. Oral bioavailability and pharmacokinetic studies showed that nimbolide has poor oral absorption but better intravenous absorption. So, this study proves to be useful in understanding and conducting safe human clinical trials and toxicological studies for more drug development of nimbolide.

JH/IASTAM2022/PP64

Development of monograph, chemoprofiling and network pharmacology studies of a nephroprotective plant: *Satawar*

Niharika, **Kabil Malhotra**, Farinaaz Bezan, Faaiz Faisal, Sayeed Ahmad*

Centre of Excellence in Unani Medicine (Pharmacognosy & Pharmacology) Bioactive Natural Product Laboratory (BNPL), Jamia Hamdard, New Delhi - 110062, India
***Corresponding author:** +91-9891374647, sahmad_jh@yahoo.co.in

Asparagus racemosus (family-Liliaceae) commonly known as *Satawar*. The therapeutic applications of this plant have been reported in traditional system of medicine. Various bioactive phytochemicals isolated from this plant are responsible for nephroprotection. The proposed study aimed to develop monograph, chemoprofiling and establish network pharmacology of *Satawar.* Preliminary pharmacognostic evaluation of *Satawar* root was done by studying its microscopic and macroscopic characters and monograph was developed as per USP standards. Methanolic extract was prepared using ultrasonication method. The prepared extract was subjected to determination of total phenolic (Folin-ciocalteu method) and flavonoid content (Aluminium chloride method) Further, qualitative and quantitative estimation was carried out by developing a TLC fingerprint profile and quantification of active biomarkers. High-throughput bioautographic determination was carried out for identification of antioxidant compound using DPPH. *In-silico* network-pharmacology was carried out to determine the nephroprotective potential at molecular level. Complete monograph of the *Satawar* was developed as per USP. Total phenolic and flavonoid content of the extract was determined and calculated per milligram gallic acid and quercetin respectively. TLC profile was developed and active biomarkers were quantified. High – throughput bioautographic determination revealed antioxidant compounds of the extract. *In-silico* studies reflected nephroprotective effect of the plant at molecular level and network was established. The conducted study scientifically validates the traditional knowledge of nephroprotective potential of the above-mentioned plant formulation and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP65

In-silico and in-vitro evaluation of polyphenolic compound as α-amylase and α-glucosidase inhibitors: For the search of antidiabetic molecule

Kahksha[1,2], Ozair Alam[1*], Sameena Naaz[2], Afshar Alam[2]

[1]Department of Pharmaceutical chemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062

[2]Department of computer science and Engineering, School of Engineering Sciences and Technology (SEST), Jamia Hamdard, New Delhi-110062
***Corresponding author**: 09891383114, oalam@jamiahamdard.ac.in

Background Diabetes is a metabolic disorder characterized by increased in blood sugar level, in silico molecular modeling are used to explain the mechanism of action of a ligand on a receptor. The proposed study aimed to identify the potent α-amylase and α-glucosidase inhibitor from the polyphenolic compounds. The polyphenolic compounds (apigenin, caffeic acid, catechin, ellagic acid, ferulic acid, gallic acid, kaempferol, luteolin, nobiletin, and quercetin) were selected for ADME analysis, conanical structure of the polyphenolic compounds were downloaded from the chemical database PubChem (https://pubchem.ncbi.nlm.nih.gov/), ADME analysis were carried out on the library of polyphenolic compounds using SwissADME (http://www.swissadme.ch/) online tool, α-amylase (PDB: 1B2Y) and α-glucosidase (PDB: 3W37) receptor protein were downloaded from the protein databank (https://www.rcsb.org/), molecular docking were performed using Maestro Schrodinger (version 11.8) software, acarbose were used as reference standard molecule. In-vitro α-Amylase and α-Glucosidase were carried out to find out IC_{50}. SwissADME analysis shows that none of the selected polyphenolic compound cross blood brain barrier, expected to be orally bioavailable (low polarity and flexibility), non-toxic, and absorb well. The Docking score of all polyphenolic compounds ranged between -8.780 to -4.230 kcal/mol, and the glide energy ranged from -54.698 to -27.081 kcal/mol, respectively for α-Glucosidase receptor, whereas on α-Amylase between -4.835 to -8.345 kcal/mol, and the glide energy ranged from -26.137 to -53.437 kcal/mol, respectively. In vitro and α-Glucosidase showed that apigenin have maximum activity (IC_{50} 46.38 ± 2.12) on α-Amylase whereas Luteolin have maximum activity (IC_{50} 41.22 ± 1.18**)** on α-Glucosidase. In-silico and in-vitro studies showed that the leuteolin and apigenin have significant inhibitory activity on the α-amylase and α-glucosidase enzyme.

JH/IASTAM2022/PP66

Aloe vera in healthcare and herbal cosmetics: From waste to wealth

Kajal Dhiman*, Arya Lakshmi Marisetti, Devesh Tewari

Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Sciences, Delhi Pharmaceutical Sciences and Research University, New Delhi 110017, India
Corresponding author: 85804 44065, dhimankajal847@gmail.com

Aloe vera is a hardy, perennial, tropical, drought-resistant, succulent plant belonging to the Liliaceae family which, historically has been used for a variety of medicinal purposes. It has a significant historical role in indigenous medical systems. The present review is focused on the comparative analysis of the uses and advancement of Aloe vera in different time period. A systematic study on Aloe vera was performed. PubMed, Science Direct and Scopus were searched through Boolean information retrieval method using appropriate keywords related to Aloe vera and its history, phytoconstituents and uses. The use of Aloe vera in herbal medicine has a history of over 5000 years. Aloe was used for the first time on record in Egypt in the 16th century B.C. All civilizations without exception have used the plant as a therapeutic remedy. Aloe vera appears in Chinese and long been referred to in Arabic culture as the "flower of the desert." Since ancient times, nations all over the world have employed the herb Aloe vera for its therapeutic powers. In India, during early millennium the plant was not much explored and was spread as waste. However, after significant scientific advancement It has emerged as a much economically valuable plant with diverse applications in healthcare and cosmetics. The value of Aloe vera has changed tremendously in last few decades and still there is hope for bioprospecting using different parts of this plant.

JH/IASTAM2022/PP67

Ethnobotanical wealth of Nyishi Tribe: the largest ethnic group of Arunachal Pradesh, India

Kipa Pape[1*], Tejesvi Manwati[2], Arya Lakshmi Marisetti[1], and Devesh Tewari[1]

[1]Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Sciences, Delhi Pharmaceutical Sciences and Research University (DPSRU), New Delhi 110017, India

[2]Department of Clinical Research, Delhi Institute of Pharmaceutical Sciences and Research (DIPSAR), Delhi Pharmaceutical Sciences and Research University (DPSRU), New Delhi 110017, India
Corresponding author: 84150 23629, papekipa5@gmail.com

Nyishi community is the largest ethnic group in Arunachal Pradesh, a mountainous state in northeast India. This community follows a spiritualistic, shamanic religion called Donyi-Polo, which focuses on the worship of Donyi (the Sun) and Polo (the moon). Nyokum Yullo is the main festival celebrated by the Nyishi community every year on the 26th of February. Along with their cultural uniqueness, Nyishi people also utilize substantial amount of flora and fauna for their healthcare needs. The present study aimed to understand the ethnobotanical wealth of Nyishi tribe against various ailments. Secondary data was collected using available literature on the ethnobotanical wealth of the Nyishi tribes using various search engines. Herbal products play a huge role in Nyishi people's life. Due to the lack of a modern healthcare system in Arunachal Pradesh, the people in the state still depend on herbal remedies of curing themselves of any ailment or disease. Some of the prominent herbs utilized by the Nyishi people are Solanum nigrum L. for common cold, cough, and fever; Abroma augusta (L.) to increase appetite and in dysentery; Raphanus sativus L.: root and stem as antihelmintec and many more. Nyishi tribes are extremely affluent in plant-based medicinal knowledge among the tribes of Arunachal Pradesh. The ethnobotanical wealth of the Nyishi tribe can be utilized for the socio-economic development of the tribe by adopting a suitable benefit-sharing model for them.

JH/IASTAM2022/PP68

Nephroprotective studies of plant: *Glycyrrhiza glabra*

Sageer Abass[1], **Komal Gulati**[1,2], Sayeed Ahmad[1,2*]

[1]Bioactive Natural Product Laboratory, SPER, Jamia Hamdard, New Delhi, 110062, India

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi, 110062, India
***Corresponding author**: sahmad_jh@yahoo.co.in

In Unani system of medicine, *Glycyrrhiza glabra* (Asl-Us-Soo) has been scriptured as a potent nephroprotective agent. The major chemical constituents found in *Glycyrrhiza glabra* are glycyrrhizin, glycyrrhetic acid, asparagine, isoliquiritin, isoflavones, etc. The proposed study aimed to show different nephroprotective studies of *Glycyrrhiza glabra* extract. For the selection of significant information for the nephroprotective study, the materials were assembled from literature search using several databases such as Google Scholar, PubMed, Springer, and Science Direct database. Different studies show the nephroprotective effect of *Glycyrrhiza glabra* extract. Due to the presence of antioxidants, they could protect body against nephrotoxicity by changing the levels of antioxidant enzymes. One of the studies show that *Glycyrrhiza glabra* can alleviate Methotrexate -induced hepato-renal damage by decreasing oxidative stress and suppressing the ensuing activation of pro-apoptotic and pro-inflammatory pathways. Other findings revealed that in mouse models, gentamicin-induced kidney damage can be reversed or ameliorated by administering *Glycyrrhiza glabra* Extract. It has been seen that *Glycyrrhiza glabra* extract reversed the adverse effect of diabetes on rats due to its antioxidant and hypoglycaemic effects. The extract restored renal function, reduced blood glucose level, weakened body-weight loss, regulated the adverse impact of diabetes on renal malondialdehyde, glutathione, superoxide dismutase, and catalase activity. The studies show the nephroprotective effect *Glycyrrhiza glabra*. Additional clinical trial studies would be needed to justify and further evaluate the potential of the plant as a nephroprotective agent in human.

JH/IASTAM2022/PP69

Therapeutic and nutritional role of edible oils: A promising prospect

Lavish Vaid[1*], Prerna Sarup[2], Madhukar Garg[1], Jasleen Kaur

[1]Chitkara College of Pharmacy, Chitkara University, Rajpura- 140101, India

[2]Swami Vivekanand College of Pharmacy, Banur -140601, India
Corresponding author: 8580518683, lavishvaid04@gmail.com

Edible oils are extensively consumed foods derived from various vegetables and a few animal sources. Approximately 96% of them are triacylglycerides, consisting of a variety of fatty acids, phospholipids, phytosterols, tocopherols, antioxidants and waxes accounting for a large portion of Indian household food expenditure. They have been ulitilized for their medicinal and nutritional benefits since ages. The present compilation intended to outline its role in healthcare management and to emphasize the nutritional value of the edible oils. The information was gathered from various online scientific databases like PubMed and Science direct. It provided an overview of the therapeutic value of the edible oils encompassing anti-ageing, anti-oxidant, anti-inflammatory and anti-cancer properties. Additionally, oils such as soybean oil, sesame, sunflower oil, olive oil, palm oil, flaxseed oil, corn oil and coconut oil proved their significance as they mitigated the risk of heart diseases, lowered the concentration of bad cholesterol, and reduced the risks of kidney stone formation when examined by various analytical and pharmacological procedures. Furthermore, nutritional values of edible oils were also significantly higher as they were found to possess majority of the fatty acids, vitamin E and certain phytochemicals required as essential nutrients in human diet. It can be stipulated that edible oils constituted an important source of energy and as carrier for growth and metabolism of cells establishing its therapeutic and food value.

JH/IASTAM2022/PP70

Preclinical assessment of *Withania somnifera*, an herbal preparation: A potential therapeutic modality in lung fibrosis

Maaz Naqvi[1], Saman Anees[2], Mohd. Rafi Reshi[1], Nafaa Hasan[1], Sana Rehman[1], Kavita Gulati[3], Arunabha Ray[1*]

[1]Hamdard Institute of Medical Sciences & Research, Jamia Hamdard University Delhi, 110062

[2]Dept. of Amraze Niswan Wa Atfal, SUMER, Jamia Hamdard University New Delhi, India

[3]Dept. of Pharmacology, Vallabhbhai Patel Chest Institute, University of Delhi, Delhi-110007

[3]Central Council for Research in Unani Medicine (CCRUM), New Delhi.
***Corresponding author:** arunabha14@yahoo.co.in, 9818037595

Idiopathic pulmonary fibrosis is an uncommon lung illness with no known cause that leads to death quickly. Biomarkers are desperately needed in IPF as differential diagnostic tools, predictors of disease progression, and therapeutic response. Fibrosis is commonly associated with increase in the level of different markers Krebs von den Lungen-6 Antigen, Matrix Metalloproteinases-1 and -7, Periostin and Intercellular Adhesion Molecule 1. In rats, lung fibrosis was created by giving them a single dose of bleomycin, which caused lung fibrosis and an increase in various lung markers when compared to a control group. Different markers of lung damage were used to examine the effects of pharmacological treatments. Both doses of Withania somnifera treatment revealed lung fibrosis effects that were comparable to those seen following normal medication treatment. When compared to controls, bleomycin induced lung fibrosis was associated with higher levels of KL6, MMP7, ICAM-1 and perositin level. It was found that both doses of Withania sominifera were helpful in preventing bleomycin induced lung fibrosis in rats, as they greatly reduced lung fibrosis markers.

JH/IASTAM2022/PP71

In silico docking studies of traditional herbs *Tulsi* and *Kantakari* against paraTB

Manthena Navabharath[1], Varsha Srivastava[2], Saurabh Gupta[1], Shoor Vir Singh[1*], Sayeed Ahmad[2*]

[1]Department of Biotechnology, Institute of Applied Sciences & Humanities, GLA University, Mathura, Uttar Pradesh- 281406

[2]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi- 110062
***Corresponding authors:** sahmad_jh@yahoo.co.in, shoorvir_singh@rediffmail.com

Mycobacterium avium subspecies *paratuberculosis* (MAP) infection in domestic livestock causes persistent diarrhea, weight loss, and death and is also a potential cause of Crohn's disease (CD) in human beings. Hence, the plant-derived bioactive constituents have been taken into consideration in this regard. Herein two bioactive constituents (*Solasodine* and *Ursolic acid*) were evaluated for their safety and efficacy against MAP protein (Dephospho-Coenzyme A kinase (DPCK)) by utilizing different tools of in-silico biology. ADME/t-test, drug-likeness property test, pharmacophore modeling and PASS prediction have proved that both the constituents have better binding capacity than the available antibiotic drugs targeting protein inhibition pathway. The Docking score of the control protein, rifampicin with MAP DPCK protein, was -7.2kcal/mol. Docking scores for *Solasodine* and *Ursolic acid* were-9.0 Kcal/mol and -9.8 Kcal/mol with MAP DPCK Protein and *Ursolic acid* had the apical molecular weight of 456.7 g/mol. *Solasodine* exhibits a molecular weight of 413.64 g/mol, and Rifampicin showed a high molecular weight of 822.94 g/mol. *Ursolic acid* showed the highest Log Po/w value (7.0) followed by *Solasodine* (5.2) and Rifampicin (-0.05). Solasodine Pharmacore modeling started 4-point assumption (Characteristics: B1, B2, E3, S4) with MAP Dephospho-Coenzyme A kinase (DPCK) Protein and also PASS prediction study behavior was exhibited for the 10 deliberate biological activities and no toxic effects. Studying the observations, it can be inferred that these two phytochemicals can be adequately used to treat *paratuberculosis* thereby combating inflammatory bowel disorders (IBD) of autoimmune nature.

JH/IASTAM2022/PP72

The systematic review to evaluate the efficacy and safety of herbal medicines in psoriasis

Masarat Fatima

Department of Amraze Jild wa Tazeeniyat, School of Unani Medical Education and Research, Jamia Hamdard, New Delhi, 110 062, India
Corresponding author: masaratfatima@jamiahamdard.ac.in

About 2% of world's population is suffering from psoriasis, which is having no permanent cure. Due to its recurrence, associated co morbidities and severe effects on the quality of life it became an important area for researcher's to find a treatment having good results without toxicity /or side effects. We present a systemic review that summarized exhaustive literature of different plant resources known to have anti-psoriatic potential on the basis of their clinical study proof to disseminate the knowledge of medicinal plants used for treatment of psoriasis. A total of thirty seven clinical trials, three case series and two case reports were searched from electronic databases (Medline, Embase, Scopus and Web of Science) from their inceptions to June 2022 on efficacy and safety of single or compound drug preparation used in psoriasis. While reviewing and evaluating data most of the drugs (Aloe Vera, Azadirachta Indica, Berberis vulgaris, Boswellia serrata ,Camptotheca acuminata, Capsicum frutescens, Curcuma longa, Honey, Indigo naturalis, Kukui nut oil, Mahonia aquifolium, Nigella sativa, Sphaeranthus indicus, Wrightia antidysenterica, Fumaria indica etc.) decrease sign & symptoms like erythema, thickness, infiltration desquamation, pruritus, woronoff ring, auspitz sign & candle grease test. But out of these useful herbs some herbs like Aloevera, Boswellia serrata, Curcuma longa, Indigo naturalis work on LTB4, TNFα, VEGF, PGE, IL- 22 serum levels and expressions of proliferating marker Ki-67, inflammatory marker CD3 and decrease acanthosis, parakeratosis and angiogenesis in psoriatic patients. The current review explores medicinal plants known to have a rich variety of chemical compounds and are widely employed by the traditional healers for the treatment of psoriasis and having good result without toxicity /or side effects as reported in a wide range of synthetic therapeutic agents.

JH/IASTAM2022/PP73

Therapeutic potential of *Bergenia ligulata* extracts against Urinary Bladder Cancer cells

Masood Nadeem[1], Khalid Imtiyaz[1], Faqua Zarreen[1], M. Moshahid Alam Rizvi[1*]

Genome Biology Lab, Department of Biosciences, Jamia Millia Islamia, Jamia Nagar, New Delhi-110025
***Corresponding author**: mrizvi@jmi.ac.in

Worldwide Urinary Bladder cancer is the 10th most common cancer with 4.4% incidence in 2021. Plants offer the best chemotherapeutic alternatives to treat this due to both, its lesser side effects and cost effect. Organic/aqueous extracts of *Pashanbheda* rhizome made under soxhlet apparatus and evaluated through MTT assay on T-24 and NBT-II (Human and Rat UBC cells respectively). GCMS of the active extracts revealed two main bioactive compounds "*Alpha methylene gamma valerenolactone* (AMGV) and *oleic acid"*. We further analysed the anticancer activities of the said compounds by employing the techniques like MTT, cell cycle analysis, Apoptosis, ROS generation, and loss of mitochondrial membrane potential. Among all extracts of *Pashanbheda,* Methanolic extract showed highest cytotoxicity against both, T-24 and NBT-II cells followed by Acetone, Aqueous and Hexane extracts after 24 hr treatment. AMGV showed IC_{50} value of < 107.12 µM on either cell. Oleic acid did not show any palpable toxicity even at 1mM concentration, therefore we did not proceed any further. DAPI, DCFDA, PI, and TMRM staining established beyond any doubt the anticancer events like, nuclear morphology based cell death, ROS generation, cell cycle analysis, and loss of mitochondrial membrane potential, respectively. Our studies reveals that methanolic extract had highest concentration of AMGV with minimal IC_{50} 80.85 µM on T-24 cells. The bioactive ingredient, therefore has great potential to be developed as anti-bladder cancer drug.

JH/IASTAM2022/PP74

Development of monograph, chemoprofiling and network pharmacology studies of a nephroprotective plant: *Santalum album* (Sandal-e-safaid)

Gaurav[1,2], **Md Meraj Hussain**[1], Md Farhanuzzaman[1], Md Azhar, Sayeed Ahmad*

[1]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi- 110062

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard-110062
***Corresponding author**: Phone: 9891374647, sahmad_jh@yahoo.co.in

Santalum album (Family: Santalaceae) is commonly known as Safed Chandan. It is distributed widely in India especially in the southern region, Karnataka and Tamil Nadu. It is extensively used in the Unani systems of medicine as it has anti-inflammatory, antioxidant, analgesic & anti-hyperglycaemic properties. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per USP standards. Methanolic extract was prepared using ultrasonication method. The prepared extract was subjected to determination of total phenolic (Folin-ciocalteu method) and flavonoid content (Aluminium chloride method). Further, qualitative and quantitative estimation was carried out by developing a TLC fingerprint profile and quantification of active biomarkers. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective potential at molecular level. Complete monograph of the nephroprotective plant Sandal-e-safaid was developed as per USP. Total phenolic and flavonoid content was found enriched in the prepared extract was determined and was calculated per milligram gallic acid and quercetin respectively. TLC profile was developed and found many major and minor phytoconstituents and quantification of active biomarkers was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of the plant at molecular level and network was established. The conducted study scientifically validates the traditional knowledge of nephroprotective potential of the aforementioned Sandal-e-safaid can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP75

Formulation development, Box Behnken design assisted optimization and evaluation of combinatorial lipid-based nanogel for psoriasis

Meraj Alam[1], Showkat R. Mir[2], Saima Amin[1*]

[1]Department of Pharmaceutics, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India

[2]Phytopharmaceuticals Research Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India
***Corresponding author**: samin@jamiahamdard.ac.in

Psoriasis is a chronic autoimmune inflammatory skin disease affecting 2-5 % of the world population. Conventional therapies have limited efficacy due to lower penetration and higher side effects, and also, no single topical agent is perfect for managing psoriasis. Therefore, TAC and THQ loaded combination therapy using lipidic nanogel may be considered suitable strategies to overcome the shortcomings of conventional treatment. Development and optimization of TAC-THQ co-loaded lipidic nanogel for enhanced dermal permeation and retention were studied. Dual drug loaded lipidic nanogel containing TAC and THQ were prepared by melt emulsification followed by ultrasonication technique and are then optimized by BBD to get the desired formulation. Particle size, PDI, shape, surface morphology, compatibility and drug solubilization was confirmed using Malvern zeta sizer, SEM, TEM, FTIR and DSC. Combinatorial lipidic nanogel of TAC and THQ has been prepared and optimized by using BBD. The particle size and PDI of the optimized formulation were found to be 126.97±2.22 nm and 0.144±0.21, respectively. The Entrapment efficiency of the optimized formulation was found to be 76.48±2.49 and 71.44±2.54 % for THQ and TAC, respectively. TEM & SEM studies confirmed the spherical shape of the formulation. Complete solubilization and compatibility of the drugs with excipients were confirmed using DSC. FTIR analysis further confirmed the compatibility of the drug with excipients. The combinatorial lipidic nanogel containing TAC and THQ can be used for dermal targeting against psoriasis.

JH/IASTAM2022/PP76

Extraction of bioactive constituents from Amla (*Phyllanthus emblica* Linn.) and their in vitro and in silico analysis against structural proteins of Dengue virus

Mohammad Altamish[1], Mirza Sarwar Baig[2], Sayeed Ahmad[3*], Anuja krishnan[2*]

[1]Department of Pharmacology School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, 110062, India

[2]Department of Molecular Medicine, School of Interdisciplinary Sciences & Technology,Jamia Hamdard, New Delhi-110062 India

[3]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research,Jamia Hamdard, New Delhi, 110062, India
***Corresponding author**: anuja.krishnan@jamiahamdard.ac.in

Dengue virus (DENV) particle is composed of RNA genome and structural proteins, M and E protein on the envelop which are primarily involved in entry to host cell. *Phyllanthus emblica* Linn. (Amla), is an important source of vitamin C, minerals, apigenin, quercetin, rutin, and luteolin. The study to evaluate the antiviral potential of Amla against structural proteins of DENV. The crystal structures of the E (PDB-4UTC), proteins were retrieved from the (PDB) and docked with phytoconstituents of Amla to explore their inhibitory potential using AutoDock and further screened for 50 ns of dynamic simulation implemented on the GROMACS platform. The percentage yield value of plant extract was found 26.68 ± 0.19,and quality control analysis by HPTLC fingerprinting showed separation of different toluene: ethyl acetate: formic acid (5:4:1, v/v/v) showed separation of components Quercetin (R_f 0.05), Apigenin (R_f 0.09) and Luteolin (R_f 0.12) were identified at 254 nm . IC_{50} value of plant extract was 746.66 µg/mL. Docking study revealed, Quercetin, Apigenin, and Luteolin showed ΔG against E protein with -7.9, -7.5, and -7.4 Kcal/mol, and their pKi were found to be 1750, 723.51, and 592.52 µM, respectively. ADMET analysis revealed that these compounds could be potential drug candidates following drug-likeness guidelines. Molecular simulation analysis showed stability in RMSD values. The average SASA profiles of the 3 complexes varied from 325-350 nm^2. Thus, these phytoconstituents from amla can be potential drugs natural compounds in inhibition of E protein and thus block entry of virus to host cell.

JH/IASTAM2022/PP77

Hepato-renal toxicity of lowest therapeutic dose of methotrexate in CIA rat model of rheumatoid arthritis

Mohammad Hasan, Haider A. Khan*

Department of Medical Elementology & Toxicology, School of Chemical and Life Sciences, Jamia Hamdard, New Delhi – 110062
***Corresponding author**: 96431 55931, hakhan@jamiahamdard.ac.in

Rheumatoid arthritis (RA) is an autoimmune chronic inflammatory disorder of unknown etiology. Methotrexate (MTX) is recommended as the first-line disease-modifying anti-rheumatic drug by the European League Against Rheumatism and the American College of Rheumatology in the treatment of RA. Accumulated literature reported a range of side effects in RA patients treated with MTX. Therefore, the present study focused on therapeutic dose of 0.6 mg/kg-BW per week of MTX orally in collagen induced arthritic rats of 6-8 weeks for 4 weeks. Animals were divided in to four groups (n = 6). No treatment was given to control animals (group I) except vehicle (phosphate buffer saline), CIA was developed in group II, and group III was treated with MTX only, while in group IV (CIA + MTX) was treated with MTX for four weeks after RA development. Animals were sacrificed after 24 hours of last dose by cervical dislocation. Liver and kidney were collected and both enzymatic and non-enzymatic oxidative markers viz. catalase (CAT), superoxide dismutase (SOD), nitric oxide (NO), myeloperoxidase (MPO), lipid peroxidase (LPO), glutathione (GSH) were performed along with histopathological examinations. Significantly decreased levels of enzymatic oxidative stress markers (CAT, SOD and MPO) and non-enzymatic GSH whereas increased levels of non-enzymatic oxidative markers (LPO and NO) have been found in group II, III and IV in comparison of control group. Histopathological examination of hepatic and renal tissues also supported the findings of biochemical analysis. These finding suggested that the recommended therapeutic dose MTX causes significant hepato-renal toxicity.

JH/IASTAM2022/PP78

Potential Ayurvedic Nephroprotective plants: Phytochemistry and Pre-clinical data

Mohammad Hassan[1], Parakh Basist[2]

[1]Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India-110062

[2]Department of Pharmacology, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India-110062

Kidney disease is one of the serious health issues, which causes worrisome morbidity and economic burden. This explorative review was undertaken to provide the nephroprotective (NP) medicinal plants along with their research-based evidences. The present literature survey aimed to provide in-depth and better evidences of the global burden of KD, medicinal plants as NP with emphasis on mechanism of action both in vitro and in vivo, their wide biological sources on reported medicinal plants for management of kidney disease and its related disorders. Comprehensive information was searched systematically from Ayurvedic Pharmacopoeia of India and electronic databases, namely, PubMed, Sciencedirect, Wiley, Scopus, Google Scholar and Springer to find relevant data for publication on medicinal plants with nephroprotective potential. More than 100 plants were screened in first search from Ayurvedic Pharmacopoeia of India. The medicinal plants having multiple research evidence along with wide number of medicinal plants sources and mechanism reported for nephroprotection has been selected and reviewed. This review, based on pre-clinical data of NP medicinal plants, provides scientific-basis for the rational discovery, development and utilization of these in upcoming treatment practice. Further, more clinical studies are required to increase the pharmacodynamics and pharmacokinetic understanding of medicinal plants. Also, more specific evaluation for natural sources is needed.

JH/IASTAM2022/PP79

UPLC-MS analysis for identification of antidiabetic and antioxidant compounds from heartwood extract of *Pterocarpus marsupium*.

Mohammad Irfan[1,2], Mohammad Irfan Qureshi[1*] Sayeed Ahmad[2,3*]

[1]Department of Biotechnology, Jamia Millia Islamia, Jamia Nagar, New Delhi-110025

[2]Bioactive natural product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062

[3]Centre of Excellence (CoE) in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi-110062, India
***Corresponding author:** sahmad_jh@yahoo.co.in, mirfanq@gmail.com

Diabetes is a chronic metabolic disorder that affects the metabolism of proteins, fats, and carbohydrates. It is defined as an increase in blood glucose levels following any type of meal. Diabetes is caused by either insulin deficiency or insulin malfunction. Many medicinal plants are used to treat diabetes without side effects, and many existing medicines are derived from them. The present findings using Ultra Performance Liquid Chromatography–Mass Spectroscopy (UPLC–MS) would be useful for the identification of antidiabetic compounds of heartwood extract of *Pterocarpus marsupium*. These findings would pave ways for the isolation of antidiabetic compounds and development of antidiabetic phytopharmaceuticals. The main aim was to identify the antidiabetic and antioxidant compounds from *Pterocarpus marsupium*. Dried plant parts were successively powdered and extracted with methanol. Mobile phase A: 5% acetonitrile/water (v/v), containing 0.1% formic acid (v/v), mobile phase B: 100% acetonitrile, containing 0.1% formic acid (v/v). The stock solution was prepared at a concentration of 0.5 mg/ ml in methanol and sonicated for several minutes. The extract was screened using UPLC–MS-based chromatographic profiling. Methanolic extract of *Pterocarpus marsupium* was analyzed through UPLC-MS and identified 10 potent antidiabetic and antioxidant compounds viz Formononetin (Rt 2.689), Epicatechin (Rt 3.047), 2-Methoxycinnamic acid (Rt 3.047), Aspalathin (Rt 3.047), Pterocarposide (Rt 3.047), Gallic acid (Rt 4.000), Trans-pterostilbene (Rt 4.000), Wognion (Rt 4.000) , Curcumol (Rt 4.000), Berberine (Rt 4.000). The result of the study showed that *Pterocarpus marsupium* may show potent antioxidant and antidiabetic potential due to the heavy load of antioxidant and antidiabetic compounds identified by UPLC-MS analysis.

JH/IASTAM2022/PP80

Comparative Nephroprotective potential and network pharmacology based investigation of a traditional Unani formulation: Sharbata-e-Baazori

Mohammad Umar Khan[1,2], Anuja Krishnan[3], Sayeed Ahmad[1]*

[1]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India

[2]Department of Food Technology, School of Interdisciplinary Science and Technology, Jamia Hamdard, New Delhi-110062, India

[3]Institute of Molecular Medicine, School of Interdisciplinary Science and Technology, Jamia Hamdard, New Delhi-110062, India
***Corresponding author**: sahmad_jh@yahoo.co.in, 9891374647

Sharbat-e-Bazoori Haar (SBH) and Sharbat-e-Bazoori Barid (SBB) is a traditional Unani formulation, popularly used for the management of kidney diseases without any scientific data. Ingredients of SBH have strong therapeutic relevance against the malfunction of kidney's system, traditionally. Due to lack of scientific evidence, our work aimed to evaluate the protective potential of sugar free SBH and SBB in Cisplatin (CP)-induced nephrotoxicity both *in vitro* and *in vivo* followed by phytochemical analysis as well as metabolites quantification. In-vitro nephroprotective and antioxidant studies for SBH and SBB were performed on HEK 293 cells against cisplatin-induced cytotoxicity. Further, the in-vivo nephroprotective study was performed followed by estimation of marked changes in biochemical markers, antioxidant status and inflammatory cytokines such as NF-kB, TNF-α, IL1β, CASP-3 against cisplatin-induced nephrotoxicity in rat. Thereafter, HPTLC quantitative analysis was performed for simultaneous estimation of gallic acid, caffeic acid, and ferulic acid in SBH and SBB. SBH and SBB showed significant nephroprotective and cellular antioxidant potential against cisplatin-induced nephrotoxicity and oxidative stress in HEK 293 cells. In-vivo studies revealed significant amelioration in serum and urine biochemical markers and antioxidant enzymes against cisplatin-induced nephrotoxicity. Similarly, SBH and SBB exhibit antiapoptotic potential via significant reduction of NF-kB, TNF-α, IL-1β, CASP-3 expression in kidney tissue. HPTLC fingerprinting analysis revealed several phytoconstituents in SBH and SBB. The Sugar free SBH and SBB significantly ameliorated cisplatin induced nephrotoxicity. These finding clearly indicated an opportunity to develop a sugar free formulation and scientific validation of its traditional claim in Unani system of medicine.

JH/IASTAM2022/PP81

Development of monograph, chemoprofiling and network pharmacological studies of a nephroprotective plant: *Majeeth* (*Rubia cordifolia* Linn.)

Areeba Insaf[1,2], **Mohammed Zaafar Khan**[1], Sayeed Ahmad[1,2]*

[1]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi- 110062

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard-110062
***Corresponding author**: Phone: 9891374647, sahmad_jh@yahoo.co.in

In Unani system of medicine, majeeth has been scriptured as a potent nephroprotective agent. The major chemical constituents found in majeeth stem are purpurin, alizarin, ellagic acid, manjishthin, glycosides, etc. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per the USP standards. Methanolic extract of powdered drug was prepared and subjected to determination of total phenolic and flavonoid contents. Qualitative estimation was carried out using preliminary phytochemical screening and TLC fingerprinting whereas, quantification of the active biomarkers by HPTLC. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective biomarkers at molecular level. Complete monograph of the nephroprotective plant *Rubia cordifolia* Linn. stem was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram of gallic acid and quercetin respectively. TLC profile was developed for identification and quantification of active metabolites was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of metabolites and network was established. The conducted study was performed for standardization of the aforementioned plant and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP82

Quality control and fingerprint analysis of mustard oil using HPTLC, FT-IR and GC-FID

Mohd Aadil[1,2], Sayeed Ahmad[1,3*]

[1]Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India

[2]Department of Food Technology, School of Interdisciplinary & Sciences, Jamia Hamdard, New Delhi-110062, India

[3]Centre of Excellence (CoE) in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi-110062, India
***Corresponding author**: sahmad_jh@yahoo.co.in, 9891374647

Mustard oil is a traditional culinary oil that has been cultivated for millennia on the Indian subcontinent. Due to its increased demand on national and worldwide markets. Adulteration of high-priced oil with low-priced oil has become a significant problem. For the interest of customers, there seems to be an imperative need for authentication and adulteration prevention of the oil. In order to investigate the secondary metabolite spectrum of Mustard oil, acquisition of the oil samples from various brands and localities is done, quality control analysis is performed in accordance with FSSAI regulations, evaluating the acid value, iodine value, peroxide value, saponification value, unsaponifiable matter, refractive index, weight per millilitre, specific gravity and P_H ,identification of various metabolites is done by GC-MS analysis for the detection of adulterants, HPTLC fingerprints are developed, and IR spectra of the samples is studied. Mustard oil samples were collected and investigated for their physico-chemical properties like saponification value, refractive index, acid value, iodine value, P_H etc. Further, HPTLC fingerprinting of samples were done, and later subjected to GC-MS analysis and FT-IR for metabolite profiling. The results of the HPTLC fingerprinting examination of the different samples showed that the samples (S1, S2, S3, S5, S7, and S8) were pure and may be used in future research. The results of the FT-IR study revealed that the samples S1, S2, S3, S5, S7, and S8 may have been adulterated by a few undesired peaks and different analytical method (GC-FID) was used in the investigation to confirm the presence of adulterants in the oil samples.

JH/IASTAM2022/PP83

Quality control of honey by physiochemical and HPTLC analysis

Mohd Muzammil[1], Sayeed Ahmad[1,2,3*]

[1]Department of Food Technology, SIST, Jamia Hamdard, New Delhi-110062, India

[1]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi -110062

[3]Centre of Excellence (CoE) in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi-110062, India
***Corresponding author**: sahmad_jh@yahoo.co.in, 9891374647

Honey is one of humankind oldest natural, sweet and viscous product produced by honey bees (*Apis mellifera*). Since ancient times, honey has been regarded as nutritious food and also enjoyed increasing recognition for its bioactivities and potential medicinal applications. It is more vulnerable to adulteration, mislabeling, and unethical mixing with cheaper and low-grade sugars, and other worthless substitutes and sometimes also with a harmful mixture of chemicals such as antibiotics, colourings and HMF, and other substances. The aim of this study was to test the authenticity and comparison of four honey sample of different Indian brands by physico-chemical analysis and high-performance thin-layer chromatographic (HPTLC) for quantitative analysis. Determination of moisture content, specific gravity, total reducing sugars, Fiehe's Test, pH test, ash content, acidity, protein content, HPTLC chromatography. All the samples passed the quality standard guidelines laid by FSSAI and other international organizations. Hence, the samples used for analysis are authentic. In HPTLC analysis we found several bioactive compounds in high concentration, specifically on R_f 0.169. Although the concentration of the bioactive compounds was found to be higher in sample 2 and 1 as compared to sample 3 and 4. From this study we concluded that the chemical-based assay and the HPTLC analysis proved that sample 2 and sample 1 possessed the high quality standards as reported by FSSAI. Thus, the chemical-based assay and the HPTLC analysis proved that sample 2 and sample 1 possessed the high quality standards as reported by FSSAI.

JH/IASTAM2022/PP84

Pharmacokinetic characterization of cardamonin: A review

Mohd Qasid Lari*

School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi 11062, India
***Corresponding author**: 7982688892, mohdqasid123@gmail.com

Nature is the ideal source of intellect and knowledge. Nature itself provides us many remedies for the wellbeing of mankind and civilization. Among the natural sources plants are majorly used for medical research. Cardamonin (CRD) that is a chalconoid extracted from various medicinal plants of Zingiberaceae family, had exhibited promising capacity in prevention of cancer and therapy. A series of in vivo and in vitro studies were performed to specify its preclinical pharmacokinetics required for further development. The review aims at the Pharmacokinetic and stability studies of Cardamonin and its therapeutic potential. The databases used were Google Scholar, PubMed, Science Direct, Elsevier, books such as pharmacopeia and other textbooks. Original articles were included, and information was collected using keywords “Cardamonin”, “Phytoconstituents”, “Anticancer”, “Chalconoid”. It is a potential anticancer chalcone. It acts predominantly by reducing metastasis and proliferation of tumour cells. For pharmacological interpretation, in vivo and in vitro studies and analytical studies using HPLC-UV and LC-MS/MS methods were done to elucidate its preclinical pharmacokinetics. The preclinical absorption, distribution, metabolism, and excretion data are anticipated to aid the future clinical study of CRD as a potential anticancer agent. This review summarizes the Pharmacokinetic studies of Cardamonin (a chalconoid). In vitro and some in vivo studies conclude that it is used in treating cancer, but its oral efficacy can be limited due to its poor oral bioavailability. Hence, studies support that there is a need of an appropriate formulation of CRD for increasing its oral bioavailability.

JH/IASTAM2022/PP85

A comparative in vitro, pharmacognostic and phytochemical Evaluation of *Sida cordifolia* and *Sida rhombifolia*

Mohd. Imran[1], Shital Pradeep Patil[1], R. Sahaya Mercy Jaquline[1], Manju Sharma[2], Vidhu Aeri[1]*

[1]Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard University, New Delhi (India)-110062

[2]Department of Pharmacology, School of Pharmaceutical Education and Research, Jamia Hamdard University, New Delhi (India)-110062
***Corresponding author:** vidhuaeri@yahoo.com

In the realm of Ayurvedic pharmaceuticals, standardisation of herbal compositions using more processes is a prominent requirement. These kinds of investigations will undoubtedly broaden the scope of modern herbal research. The goal of this study was to use a Microscopy, UV Spectrophotometer to assess total flavonoid, total phenolic, total alkaloid, DPPH Antioxidant, and Alpha-amylase activity in *Sida cordifolia* and *Sida rhombifolia*. Aerial part of plants was extracted by soxhlet using hydro-alcoholic solvent (ratio - 80:20). On the basis of microscopical study we have differentiate and compare the aerial parts of both plants. At 415 nm, the total flavonoid concentration was determined using an aluminium chloride colorimetric test. By a microplate reader, we determined the total phenolic content using Folin-Ciocalteu 1:4 at 765 nm. Then, only that sample exhibiting positive alkaloid result in the qualitative method was analysed quantiatively using an ultraviolet spectrophotometer. The quantitatve method was based on the reaction between BCG (bromocresol green) and alkaloid. After this we measured DPPH and alpha amylase Anti-diabetic activity by microplate reader. All of the samples tested positive for alkaloid, flavonoid, phenolic compound, alpha amylase, and DPPH antioxidant activity, according to phytochemical analysis. Total alkaloid content was found to be highest in Hydro-alcoholic extract of both the plants. Total flavonoid content was highest in case of alcoholic extract of *Sida rhombifolia* and aqueous extract of *Sida cordifolia*. Also, the alcoholic extract of Sida rhombifolia as well as the aqueous extract of Sida cordifolia had the greatest total phenolic content. When compared to Sida rhombifolia, Sida cordifolia exhibits higher antioxidant activity in the DPPH system and higher alpha amylase inhibitory activity in the anti-diabetic system. We saw only one difference in it that *Sida cordifolia* have prismatic ca-oxalate crystals and *Sida rhombifolia* have rosette type ca-oxalate crystals. The Hydro-alcoholic extract of both plants contain 10.44% and 10.36% respectively.

JH/IASTAM2022/PP86

Hepatoprotective and Immunomodulatory effects of Dawa-Ul-Kurkum, a Unani preparation and its possible mechanisms in experimental model of ethanol induced liver damage in rats

Mohd. Rafi Reshi[1], Kavita Gulati[2], Nafaa Hasan[1], Maaz Naqvi[1], Jamal Akhtar[3], Arunabha Ray[1*]

[1]Hamdard Institute of Medical Sciences & Research, Jamia Hamdard University Delhi, 110062

[2]Dept. of Pharmacology, Vallabhbhai Patel Chest Institute, University of Delhi, Delhi-110007

[3]Central Council for Research in Unani Medicine (CCRUM), New Delhi
***Corresponding author:** arunabha14@yahoo.co.in, 9818037595

The liver is an important organ that is involved in metabolism, storage, secretion, and detoxification. Chronic alcohol misuse can cause hepatotoxicity, putting the liver's normal function in jeopardy. Hepatotoxicity caused by ethanol is primarily caused by toxic byproducts of its metabolism, which cause oxidative stress. Hepatotoxicity is commonly associated with necrosis, an increase in oxidative stress markers such as Nitrates and Nitrites (NOx) assay, Malondialdehyde levels, reduced glutathione (GSH) levels depletion, and increased liver markers. In rats, liver toxicity was created by giving them a daily dose of ethanol, which caused hepatic derangement and an increase in various liver markers when compared to a control group. Different markers of liver damage were used to examine the effects of pharmacological treatments. Hydropic degeneration, fatty changes and hepatocellular necrosis is seen were also found on histopathological investigation in some locations. Both Dawa-ul-Kurkum and Hydro-alcoholic extract treatment revealed hepatoprotective effects that were comparable to those seen following normal medication treatment. When compared to controls, ethanol induced liver damage was associated with higher levels of Malondialdehyde levels and Nitrates and Nitrites (NOx) assay, but lower levels of reduced glutathione (GSH) levels. Different degrees of attenuation in various oxidative stress markers were elicited by Dawa-ul-Kurkum and Hydro-alcoholic treatments. It finds that both treatment Dawa-Ul-Kurkum and its extract were helpful in preventing ethanol induced liver damage in rats, as they greatly reduced hepatotoxic damage markers.

JH/IASTAM2022/PP87

Development of monograph, chemoprofiling and network pharmacological studies of a nephroprotective plant: *Dhak* (*Butea monosperma* (Lam.) kuntze)

Areeba Insaf[1,2], **Mohd Sameer**[1], Mohammad Areeb[3] Sayeed Ahmad[1,2]*

[1]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi- 110062

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard-110062

[3]Department of Food technology, School of Interdisciplinary Science & Technology, Jamia Hamdard New Delhi, India
***Corresponding author**: Phone: 9891374647, sahmad_jh@yahoo.co.in

In Unani system of medicine, dhak has been scriptured as a potent nephroprotective agent. The major chemical constituents found in dhak flower are coreopsin, isocoreopsin, sulphurein, butein, butin, isobutrin, monospermoside. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per the USP standards. Methanolic extract of powdered drug was prepared and subjected to determination of total phenolic and flavonoid contents. Qualitative estimation was carried out using preliminary phytochemical screening and TLC fingerprinting whereas, quantification of the active biomarkers by HPTLC. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective biomarkers at molecular level. Complete monograph of the nephroprotective plant *Butea monosperma* (Lam.) kuntze flower was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram of gallic acid and quercetin respectively. TLC profile was developed for identification and quantification of active metabolites was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of metabolites and network was established. The conducted study was performed for standardization of the aforementioned plant and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP88

Development of monograph, chemoprofiling and network pharmacology studies of a nephroprotective plant: *Tukhm-e-Kasni* (*Cichorium intytbus* Linn.)

Monalisha Samal[1,2], **Mohd Uzair Ali[1],** Ramsha Parveen[1], Sayeed Ahmad[1,2]*

[1]Bioactive Natural Product Laboratory, Department of Pharmacognosy and phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India

[2]Centre of Excellence (CoE) in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi-110062, India
***Corresponding author:** 9891374647, sahmad_jh@yahoo.co.in

Roots of *Cichorium intytbus* Linn. exhibits nephroptotective properties in patients suffering from mild to moderate kidney dysfunction amongst many other propitious pharmacological actions such as antidiabetic, tumor inhibitory, and antioxidant activities as proven by Unani system of medicine which aims upon complete altogether wellness rather than holistic and symptomatic relieves. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per USP standards. Methanolic extract of powdered drug was prepared and subjected to determination of total phenolic and flavonoid contents. Qualitative estimation was carried out using preliminary phytochemical screening and TLC fingerprinting whereas, quantification of active biomarkers by HPTLC. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective biomarkers at molecular level. Complete monograph of the nephroprotective plant *Cichorium intybus* Linn. roots was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram gallic acid and quercetin respectively. TLC profile was developed and quantification of active biomarkers was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of the plant at molecular level and network was established. The conducted study scientifically validates the traditional knowledge of nephroprotective potential of the aforementioned plant and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP89

Determination of neuroprotective effect of AYUSH based polyherbal formulation *Itrifal muqawwi-e-Dimagh*: A sugar free dosage

Monalisha Samal[1,3], S.H.Ansari[2] and Sayeed Ahmad[1,2,3*]

[1]Bioactive Natural Product Laboratory, Department of Pharmacognosy and phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India

[2]Department of Pharmacognosy and phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India

[3]Centre of Excellence (CoE) in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi-110062, India
***Corresponding author:** 9891374647, sahmad_jh@yahoo.co.in

Alzheimer's disease (AD) is an incurable neurodegenerative disease portrayed by a dynamic decrease in psychological function and/or death of the nerve cells. In the Unani system of medicine, *Itrifal Muqawwi-e-Dimagh* (IMD) is used to enhance mental power and heal mental sickness. In this context, the effect of in house prepared sugar free IMD was studied to explore its neuroprotective potential. The main aim of the present study was to prepare sugar free dosage followed by chemo profiling of polyphenols via HPTLC and UPLC-MS, and *in-vitro* testing. Sugar free dosage of traditional IMD was prepared as per UPI, part 2, volume 2. Aqueous, hydro-alcoholic and alcoholic extracts were prepared. The polyphenolic metabolites were separated and identified via HPTLC and UPLC-MS fingerprinting. All the extracts were subjected to *in-vitro* acetylcholinesterase inhibitory activity (Ach) and anti-oxidant activity by DPPH and reducing power assay to determine the best active extract for neuro protective activity. The HPTLC and UPLC-MS chromatogram revealed the presence of many polyphenols in the dosage extracts. Methanolic extract was found to be highly active against *in-vitro* DPPH, reducing power and acetyl cholinesterase inhibitory activity, pointing towards its neuroprotective potential via cholinergic and anti-oxidant hypothesis. The novelty of the study remains in the reduced risk of AD with prepared sugar free dosage of IMD to improve the patience compliance among targeted elderly diabetic patients. The molecular mechanism could be concluded by *in silico and in vivo* studies, which is the next stage of study.

JH/IASTAM2022/PP90

Vitamin D enriched mushrooms improve serum vitamin D levels and bone homeostasis in vitamin D deficient rat models

Muneeb Malik[1], Yasmeena Jan[1], Afrozul Haq[1], Bibhu Prasad Panda[2*]

[1]Department of Food Technology, Jamia Hamdard, New Delhi,

[2]Department of Pharmacognosy and phytochemistry, Jamia Hamdard, New Delhi
***Corresponding author:** bppanda@jamiahamdard.ac.in, 9990335013

Vitamin D deficiency is highly prevalent in India and worldwide. Mushrooms are important nutritional foods and in this context *Lentinula edodes, Agaricus bisporus* and *Pleurotus ostreatus* are known for their bioactive properties. The application of ultraviolet UV irradiation for the production of substantial amounts of vitamin D_2 is well established. Our study is aimed to evaluate the efficacy of vitamin D enriched edible mushroom in improving serum vitamin D levels and restoring bone homeostasis in a vitamin D deficient rat model and equating with marketed supplements of vitamin D_2 and D_3. Levels of serum 25 hydroxy vitamin D (25-OHD), parathyroid hormone (PTH), calcium, phosphorus and alkaline phosphatase (ALP) were significantly ($p<0.05$) improved after 4-weeks of feeding period. Further, microscopic observations indicate an improvement in osteoid area and the reduction of trabecular separation of the femur bone. In addition, the level of expression of the VDR gene and genes metabolizing vitamin D were explored. It was observed that in mushroom fed and vitamin D supplemented groups, there was upregulation of CYP2R1 and VDR, while downregulation of CYP27B1 in liver. Further, CYP27R1 was downregulated, while CYP27B1 and VDR were upregulated in kidney tissue. The role of vitamin D_2-enriched mushrooms may extend beyond the normalization of serum 25-hydroxy vitamin D levels. Vitamin D_2 from UVB-exposed mushrooms is bioavailable, safe and functional in supporting bone health and mineralization in rat model without evidence of toxicity.

JH/IASTAM2022/PP91

Quality standards of *Solanum indicum* wildly growing in Northern Bihar region of India

Murteza Iqubal[1,2*], Satish Kumar Sharma[1] , Md. Sarfaraj Hussain[2]

[1]Department of Pharmacognosy & Phytochemistry, School of Pharmacy, Glocal University, Delhi Yamunotri Marg, Mirzapur Pole District- Saharanpur, Uttar Pradesh, 247121, India

[2]Lord Buddha Koshi College of Pharmacy, Baijanathpur, Saharsa, 852201, Bihar, India
***Corresponding author:** mutezaiqubal@gmail.com, 7827873327

Solanum indicum L. (Family Solanaceae), also known as poison berry in English, is a thorny, heavily branched perennial under shrub that can grow up to 1 meter in height. This wonderful medicinal plant is extensively used in folk and traditional Indian systems of medicine to treat toxic affections, skin problems, ulcers, difficulties breathing, stomach aches, coughing, and dyspepsia, among other conditions.An attempt has been made to highlight this folk herbal medicine through present study which will assist in standardization for quality, purity and sample identification. This study determines various pharmacognostic and phytochemical standards helpful to ensure the purity, safety, and efficacy of medicinal plant *S. indicum*.The leaves parts, powdered materials, and extracts were examined macro- and microscopically and pharmacognostic standardization parameters were determined in accordance with the guidelines given by the World Health Organization (WHO). Parameters including extractive values, ash values, and loss on drying were determined. Preliminary phytochemical tests, fluorescence analysis, and chromatographic profiling were performed for the identification and standardization of *S. indicum*.The shape, size, color, odor, and surface characteristics were noted for intact drug and powdered drug material of *S. indicum*. Phytochemical, physicochemical, and fluorescence analysis proved useful tools to differentiate the powdered drug material. HPTLC and HPLC analysis showed the presence of important phytoconstituents such as gallic acid and quercetin.These studies provided referential information for correct identification and standardization of this plant material. These information will also be helpful to differentiate *S. indicum*from the closely related other species.

JH/IASTAM2022/PP92

The evaluation of anti-dengue viral potential of AYUSH formulation *Habb-e-Bukhar* in management of dengue fever

Muzayyana Khan[1], Mohammad Altamish[2], Anuja Krishnan[3], Sayeed Ahmad[1]

[1]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research. Jamia Hamdard, New Delhi-110062, India.

[2]Department of Pharmacology, School of Pharmaceutical Education and Research. Jamia Hamdard, New Delhi-110062, India.

[3]Department of Molecular Medicine, School of Interdisciplinary Sciences and Technology. Jamia Hamdard, New Delhi-110062, India.
***Corresponding author**: 9891374647, sahmad_jh@yahoo.co.in

Habb-e-Bukhar (HB) is a solid dosage preparation of Unani system of medicine and used since long for the management of Dengue fever. It comprises *Tabasheer* (*Bambusa bambos* Druce), *Kanakana* (Konain), *Satt-e-Gilo (Tinospora cordifolia* (Willd) Miers.) and *Samagh-e-Arabi (Acacia arabica* Wild.). Phytoecdysteroid-like compounds found in *Tinospora cordifolia* have been shown to have growth-promoting, hepatoprotective, immune-protective, antioxidant, antiviral, and platelet-increasing properties. Dengue fever (*Humma Danj*) is an epidemic disease caused by flavivirus transmitted by the *Aedes* mosquito and its management as till date is not globally accepted in any system of medicine. The study was carried out to generate a scientific data for cyto-toxic studies, anti-viral studies and metabolic profiling of HB. In-vitro cytotoxicity study using MTT Assay using C6/36 cell line, in-vitro antiviral activity by cytopathic effect and immunofluorescence assay, viral RNA quantification using RT-PCR will be carried out, quality control by HPTLC/HPLC/LCMS of extract will be conducted. HPTLC analysis of HB showed separation of fourteen components and and Rutin (Rf 0.05), Berberine (Rf 0.09) and chlorogenic acid (Rf 0.12) were identified at 254 nm. IC_{50} of aqueous extract of HB was 467.72 µg/mL and showed least toxic effect. Quality control analysis of HB via HPTLC showed good separation of components and from the in vitro results incurred, it can be concluded that HB possess good anti-viral activity.

JH/IASTAM2022/PP93

Development of monograph, chemoprofiling and network pharmacology studies of a nephroprotective plant: *Filfil Daraz* (*Piper longum* Linn.)

Muzayyana Khan[1,2], **Effat Perwin**[1], Faiz Ahmed[1], Sayeed Ahmad[1,2]*

[1]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi- 110062

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard-110062
***Corresponding author**: 9891374647, sahmad_jh@yahoo.co.in

In Unani system of medicine, Piper longum (fruit) has been scriptured as a potent nephroprotective agent. The major chemical constituents found in piper longum are piperine, piperlongumine, piperlonguminine, sesamine, terpinolene and vitamin A. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per USP standards. Methanolic extract was prepared using ultrasonication method. The prepared extract was subjected to determination of total phenolic (Folin-ciocalteu method) and flavonoid content (Aluminium chloride method). Further, qualitative and quantitative estimation was carried out by developing a TLC fingerprint profile and quantification of active biomarkers. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective potential at molecular level. Complete monograph of the nephroprotective plant *Piper longum Linn.* was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram gallic acid and quercetin respectively. TLC profile was developed and quantification of active biomarkers was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of the plant at molecular level and network was established. The conducted study scientifically validates the traditional knowledge of nephroprotective potential of the aforementioned plant and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP94

Development of monograph, chemoprofiling and network pharmacology studies of a nephroprotective Unani formulation: *Majoon Masikul Baul*

Muzayyana Khan[1], **Faiz**[1], Sayeed Ahmad[1,2]*

[1]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi- 110062

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard-110062
***Corresponding author**: Phone: 9891374647, sahmad_jh@yahoo.co.in

Majoon Masikul Baul is a semi-solid polyherbal formulation of Unani system of medicine scriptured in ancient Unani literature. It is used in *Zof-e-Masana* (Overactive bladder), *Kasrat-e-Baul* (Polyuria) and *Salsul baul*. Monograph was developed as per USP standards for the selected formulation. Ethyl acetate extract was prepared and was subjected to determination of total phenolic (Folin-ciocalteu method) and flavonoid content (Aluminium chloride method). Further, qualitative and quantitative estimation was carried out by developing a TLC fingerprint profile and quantification of active biomarkers. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective potential at molecular level. Complete monograph of the nephroprotective Unani formulation *Majoon Masikul Baul* was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram gallic acid and quercetin respectively. TLC profile was developed and quantification of active biomarkers was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of the plant at molecular level and network was established. The conducted study scientifically validates the traditional knowledge of nephroprotective potential of the aforementioned formulation and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP95

Evaluation of *in vivo* antidiarrheal activity of hydro-methanolic extract of the root of *Rumex nepalensis* in Swiss Albino mice

Nancy Guliya*, Hema Chaudhary

Faculty of Pharmaceutical sciences, PDM University, Bahadurgarh
***Corresponding author:** guliyanancy@gmail.com

Various type of natural products have been utilized by human beings for thousands of years to relieve from different disease, including diarrhoea. Antidiarrheal drugs are associated with multiple adverse effects and contraindications. *Rumex nepalensis* which is herbal plant. The root parts used by crushing, mix with water and then drunk the juice is extensively used for treating diarrhoea. However, no scientific research has been done yet to support its antidiarrheal efficacy and safety. Hence, the aim of the study was to evaluate the antidiarrheal activity and safety profile of the plant in mice. By cold maceration process, hydro-methanolic extract was extracted by using 80% methanol. Castor oil-induced diarrheal, gastro-intestinal transit, and enteropooling models have been employed to assess the antidiarrheal activity of the test extract at doses of 100, 200, and 400 mg/kg. The crude root extract caused no mortality at a single limit test dose of 2 g/kg throughout the first 24 h and for the rest of the 14 days. In a castor oil-induced diarrheal model, the hydro-methanolic extract markedly delayed the onset of diarrhoea, reduced the weight of wet and total faces wt. The study revealed that *Rumex nepalensis* root extract possesses antidiarrheal activity, which could be owing to its inhibitory effect on both gastro-intestinal motility and fluid secretion.

JH/IASTAM2022/PP96

Pre-formulation studies of Naringenin and Ferulic acid: natural antioxidant polyphenols

Nasr A. Emad, Yasmin Sultana*

School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India-110062
***Corresponding author**: 7011619901, ysultana@jamiahamdard.ac.in

The antioxidant system in the cell evolves to play a central role in scavenging free radicals to maintain redox homeostasis. The high levels of Reactive oxygen species (ROS) can damage cells by oxidizing lipids and proteins. Altered redox signaling (non-equilibrium between free radicals and antioxidants) that leads to oxidative stress is widely accepted as a contributor to the development of diabetic complication, including cardiovascular disease, nephropathy, and retinopathy. Our investigation seeks to establish the physicochemical properties of naringenin (NAR) and ferulic acid (FA) as a combination to get a synergistic antioxidant effect for diabetic complication. We have developed analytical method by UV spectroscopy for simultaneous determination of NAR and FA in methanol and PBS 7.4. Physical and chemical stability have been investigated by using Differential Scanning Calorimetry (DSC) and Fourier Transform Infrared (FT-IR). The results show that no drug content decaying was observed, which corroborates the chemical stability of the system and may guide the development of delivery systems for simultaneous administration of these two natural antioxidant polyphenols.

JH/IASTAM2022/PP97

Protective effect of glycyrrhizic acid against DEN induced liver toxicity

Nazma Bano, Johirul Islam, Haider A. Khan*

Department of Toxicology, School of Chemical and Life Sciences, Jamia Hamdard, New Delhi-110062
***Corresponding author**: hakhan@jamiahamdard.ac.in

Liver, one of the largest organ is responsible for protecting the individual against injury from xenobiotic compounds. Diethyl nitrosamine (DEN), an environmental contaminent as well as a potent carcinogen is been present in tobacco smoke, groundwater, cured and fried meals, occupational settings, cosmetics, among various source's. Glycyrrhizic acid (GA), a constituent of licorice plant, is one of the important phytochemicals utilized as traditional medicine for almost 2000 years. The present study discusses the protective effect of GA against DEN induced liver toxicity. Animals were divided in three groups. Group I (Vehicle Treated Control Group): Animals were treated with saline (i.p) (vehicle for DEN) on day 1 and water (vehicle for Glycyrrhizic acid) orally for 14 days. Group II (DEN Treated Group): Animals were administered a single dose of DEN (200 mg/kg b.wt. ip) on day 1.Group III (DEN + Glycyrrhizic acid Treated Group): Rats were administered DEN (200mg/kg b.wt. i.p) on day 1 followed by treatment with Glycyrrhizic acid (15mg/kg b.wt) from day 1 till day 14.Animals were euthanized after 14 days. Results from our study suggests GA to have positive effect in elevating the level/activity of various antioxidants while subsequently reducing membrane LPO. GA has also been shown to ameliorate liver toxicity and inflammation as is evident from decreased activity of AST & ALT. The finding from our study suggest Glycyrrhizic acid treatment shows protective effect against DEN induced liver toxicity and injury through the modulation of antioxidant defense mechanism and inflammation.

JH/IASTAM2022/PP98

In vitro anti-diabetes and free radical scavenging activity of *Berberis vulgaris*

Neeraj Kumar, Mohd. Mujeeb

Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India-110062
***Corresponding author:** mmujeeb@jamiahamdard.ac.in, 9212050090

Berberis vulgaris is a plant with reported anti-diabetic and antioxidant properties. The aim of this study is to determine the in vitro antidiabetic and free radical potentials of methanolic extract of *Berberis vulgaris*. The alpha amylase inhibitory, alpha glucosidase inhibitory, glucose uptake modulatory, haemoglobin glycosylation inhibitory and free radical scavenging activities of the extract and standards were determined at five concentrations (50, 100, 200, 250, and 300 µg/ml). While acarbose was used as standard for the alpha amylase and alpha glucosidase inhibitory potentials, metformin and ascorbic acid were employed as standard for the glucose uptake and free radical scavenging assays respectively. The therapeutic efficacy of the experimental result is appreciable. The effect of the sample to inhibit alpha amylase, alpha glucosidase and free scavenging activity, increases according to the increase in concentration and seems more effective compare to the standard. In glucose uptake modulation, the higher the glucose level the lower the efficiency of the sample or standard i.e the lower the glucose the yeast is able to uptake. The studied plant possesses anti-hyperglycemic and antioxidant activities and could be useful in the management of hyperglycemia and oxidative stress.

JH/IASTAM2022/PP99

CCD Assisted optimisation of bipartite nanotransfersomes of Risedronate Sodium and Ursolic Acid for transdermal delivery to manage osteoporosis.

Niha Sultana, Mohd. Aqil*, Yasmeen Sultana, Mohd. Mujeeb

School of Pharmaceutical Education & Research, Jamia Hamdard, New Delhi, India-110062
***Corresponding author**: 9811798725, maqil@jamiahamdard.ac.in

Risedronate sodium and Ursolic acid are known to have potential to treat osteoporosis. But due to their low bioavailability and poor absorption they often render large doses and leads to various side effects. To reduce this our study envisaged to produce nanotransfersomes to deliver the drug via transdermal route. Nanotransfersomes are known for their ultra-deformable nature which can easily squeeze into the pores of the dermis. The proposed study aimed to optimize the formulation using RSM- Central Composite Design. the goal is to obtain minimum vesicle size and PDI of optimized nanotransfersomes, and maximize the entrapment efficiency. we have applied Response surface methodology. Specifically, Three-factorial three-level Central Composite Design is used. Amount of Phospholipid (X1), surfactant (X2) and sonication time (X3) were considered as independent variables with range low, medium and high as obtained from preliminary trial. Twenty runs were obtained with axial points +alpha and -alpha. All the experimental trials showed marked variation in the vesicular size ranging from 197.89 nm to 476.56 nm, PDI ranging from 0.1 to 0.42 and EE% 72.5% to 95%. The best fitting model was found to be quadratic model. The optimized formulation was prepared at X1, X2, X3 levels i.e., 40 mg phospholipid, 6mg surfactant and 4 minutes sonication time. The observed particle size was found to be close to predicted value i.e., 271.9 nm and 269.59 respectively. EE% observed was 88.91% where as 87.45% was predicted. Similarly, PDI was found to be 0.16. The results showed no statistical significance difference ($p<0.05$), thus confirms the reliability of the optimization process.

JH/IASTAM2022/PP100

Phytochemical based evaluation of multi-targeted therapeutic effect of Indian traditional plant "Sadbarg" (Jhandu) against oxidative and inflammatory induced pathogenesis

Niharika[1], Vijay Kumar[1], Yasheshwar[2], Sayeed Ahmad[1]*

[1]Bioactive Natural Product Laboratory, Jamia Hamdard, New Delhi-110062, India

[2]Department of Botany, ANDC, University of Delhi-110019
***Corresponding author:** sahmad_jh@yahoo.co.in, 9891374647

Tagetes erecta commonly known as *Sadbarg* is a traditional Indian medicinal plant that has been grown for its various commercial and decorative purpose including immense medicinal properties. Traditionally, it is used as an anti-oxidant, anti-diabetic, neuroprotective, diuretic, etc. Due to the lack of scientific evidence based on its molecular mechanism involved in the alleviation of oxidative stress-induced inflammation and associated complication, the study explored its multi-mechanistic and therapeutic role using in-silico approaches. Network pharmacology and gene ontology analysis were performed to explore its multi-mechanistic and therapeutic action in oxidative and inflammatory stress-induced several pathophysiological morbidities. In-silico docking analyses were performed for further validation of screened phytoconstituents to investigate the biological interaction with NOX anti-oxidant enzyme. SwissADME analysis was performed to investigate the pharmacokinetic behavior of screened metabolites. Our results of network pharmacology showed the multi-mechanistic and therapeutic role of *Sadbarg* metabolites against pathophysiological pathways such as oxidative stress, inflammation, chronic kidney disease, brain disorder, leucopenia, etc and thus providing *Sadbarg* as a potential herbal drug for alleviating several acute and chronic disease. SwissADME analysis revealed significant distribution and skin permeability with log Kp value of eucalyptol (-5.3), limonene (-3.89), linalool (-5.13), methyl eugenol (-5.6), and alpha-pinene (-3.95). Hence, it can be concluded that *Sadbarg* contains several metabolites that potentially exhibited positive biological regulation against several morbidities via reducing oxidative and inflammatory stress.

JH/IASTAM2022/PP101

Significance of Unani therapeutics in the management of Knee Osteoarthritis

Nishat Khursheed[1*], Azhar Jabin[2]

[2]Department of Moalajat, School of Unani Medical Education and Research, Jamia hamdard, New Delhi, 110062, India
Corresponding author: drnishatamu@gmail.com, 9520088300

In Unani system of medicine, there are four modes of treatment including dietotherapy (ilāj bi'l ghizā), pharmacotherapy ('ilāj bi'l-dawā), regimenal therapy ('ilāj bi'l-tadbīr) and surgery (ilāj bi'l-yad) which are applied since antiquity. Knee osteoarthritis represents the degeneration of the cartilages and osteophyte formation in knee joint causing unbearable pain. All these difficulties affect daily activities and quality of life and may also have an impact on mental health. Globally over 9.6% men and 18.0% women aged over 60 years has symptomatic osteoarthritis worldwide. Its prevalence is 22% to 39% in India. Considering the increasing prevalence and limitations of the conventional treatment for the management of Osteoarthritis, people are increasingly inclined towards alternative medicine. Knee OA *(Waja-ur-Rukbah)* is considered as a disease of *balghami mizaj* as per concept of unani system of medicine so it is managed with multidirectional approach and it has been treated by a number of single drugs or compound formulations as *ilāj bi'l ghizā* and *ilāj bi'l-dawā* and various regimens of *ilāj bi'l-tadbīr*.It is treated with evacuation *(Istefragh)* followed by rejuvenation *(Tadeel)*, strengthening *(Taqwiyat)* of the joint and joint structures and analgesia *(Taskeen). Istefragh* is achieved by specific poly-herbal Unani formulations and adjacent structures by employing various regimenal modalities. *Taskeen* and *Taqwiyat* are achieved by employing either drugs or regimenal modalities. Detail with modes of unani treatment of some known unani medicine and regimes will be present on poster.

JH/IASTAM2022/PP102

Phytochemical investigation of *Aconitum heterophyllum* on the basis of LC-MS and HPLC analysis

Nitika Sharma[1], Sumeet Gairola[2,3], Prasoon Gupta[1,2*]

[1]Natural Products Chemistry Division, CSIR-Indian Institute of Integrative Medicine, Jammu

[2]Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201002, India

[3]Plant Science and Agrotechnology Division, CSIR-Indian Institute of Integrative Medicine, Jammu
Corresponding author: nitikasharma1194@gmail.com

Aconitum heterophyllum Wall (Ranunculaceae), also called "Atis," is a high-value biennial medicinal herb and its nontoxic tuberous roots are commonly used as therapeutic ingredient in the Traditional Indian and Chinese Medicinal System for various diseases like peptic ulcer, abdominal pain, diabetes, and diarrhea. These biological activities are mainly due to presence of diterpenoid alkaloids Atisine, Atidine, Isoatisine and Hetidine. Number of herbal formulations are available in the market containing *A. heterophyllum* as one the ingredients. Present investigation was aimed to standardize the extract with the help of marker compounds using analytical techniques like HPLC, LC-MS and NMR. The phytochemical investigation of *A. heterophyllum* revels that it is a potential source of structurally complex diterpenoid alkaloids requiring extensive phytochemical analysis. After extraction and fractionation process, two marker compounds (atisine and atidine) were isolated by using column chromatography from the crude extract, structures were elucidated by spectroscopic techniques (LC/MS, NMR) and data was also compared to already reported in literature. Further isolation is going on with aim of novel compounds.

JH/IASTAM2022/PP103

Dates (Khajoor) during late pregnancy (Hamal) and labor: Clinical perspectives

Niyazi Abdullah Khizar, Khalid Akhtar*, Faraha Ahmad, Mohammad Aslam

Department of Ilmul advia, School of Unani Medical Education and Research, Jamia Hamdard, New Delhi
Corresponding author: niyazikhizar@gmail.com, 9226398634

Prolonged labor is associated with fetal or maternal disorders. Pain due to prolonged labor may led parturient women to opt for elective cesarean section. Some studies suggested that consumption of dates during 3rd trimester and parturition have beneficial effect on the uterine contractions and time duration of delivery processes. The proposed study aimed to review of the clinical effect of date fruit in late pregnancy and parturition. In 2007, a study was carried out on 69 women at Jordan University of Science. Patients consumed six date fruits for 4 weeks before their EDD. Women who consumed date fruit had significantly higher mean cervical dilatation upon admission compared with others. A clinical trial was conducted among 182women at OmAlBanin Hospital in Mashhad in 2013. Date fruits were consumed. Regular consumption of dates was effective in decreasing length and time of labor process and also reduces the need of oxytocin for labor acceleration. A trial conducted at in a university of Missouri in 2017 with 154parturient women. Women were given 7dates a day to eat starting at 37 to 38weeks of gestation on labor outcome patient with an average age of 28year old. The women who consumed date fruit had significantly higher mean cervical dilatation upon admission compared with others. A study was conducted in Obs&Gynec department at GH, Mit-Ghamer city, Egypt. The 92parturient women are studied. Outcome exhibited faster labor progress as compared to other with significant difference. Consuming dates during pregnancy is advisable as it eases third trimester and relieves in labor.

JH/IASTAM2022/PP104

Development of monograph, chemoprofiling and network pharmacological studies of a nephroprotective plant: *Zafran* (*Crocus sativus* L.)

Varsha Srivastava[1,2], **Novera Khan**[1], Fatima Syed[1], Madiha Ashfaque[1], Sayeed Ahmad[1,2]*

[1]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi- 110062

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard-110062
***Corresponding author**: Phone: 9891374647, sahmad_jh@yahoo.co.in

Zafran is a perennial herb obtained from the stigmas of the *Crocus sativus* L. plant well-recognized for its antioxidant and anti-inflammatory properties due to presence of crocetin. It is used as an important nephroprotective traditional herbal medicine in the Unani System of Medicine. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per the USP standards. Methanolic extract of powdered drug was prepared and subjected to determination of total phenolic and flavonoid contents. Qualitative estimation was carried out using preliminary phytochemical screening and TLC fingerprinting whereas, quantification of the active biomarkers by HPTLC. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective biomarkers at molecular level. Complete monograph of the nephroprotective plant *Crocus sativus* L. stigmas was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram of gallic acid and quercetin respectively. TLC profile was developed for identification and quantification of active metabolites was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of metabolites and network was established. The conducted study was performed for standardization of the aforementioned plant and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP105

Therapeutic principles of Cirrhosis of liver in Unani medicine

Nuzhat Praween[1*], Azhar Jabeen[1], Umar Jahangir[2]

[1]Department of Moalajat, School of Unani Medical Education and Research, Jamia Hamdard, New Delhi, 110 062, India

[2]Department of Amraze Jild wa Tazeeniyat, School of Unani Medical Education and Research, Jamia Hamdard, New Delhi, 110 062, India
Corresponding author: nuzhat1994dr@gmail.com, 9891419527

Cirrhosis is the deteriorating condition of the human health, which it is histologically characterized by replacement of normal liver parenchyma by regenerative fibrous nodules in response to different types of chronic liver injuries. In Unani system of medicine liver and its disease has been discussed widely by different eminent physicians. Warm-e-Jigar Barid Saudawi/Warm-e-sulb a diseased condition of the liver which mimic to liver cirrhosis. In this condition the normal temperament of liver which is hot and wet is shifted to abnormal cold temperament due to multiple causes. They treated this condition by using those herbs which possess hot temperament, deobstruent, hepatoprotective, antioxidant and heptatonic in nature and got successes. The proposed study was aimed to review the therapeutic principles along with Unani drugs documented in the treatment of *Warm-e-Jigar Barid Saudawi/ Warm-e-sulb*. Eminent Unani classical literature were explored. After exploring various Unani classical literature we come across the fact that the main pathology behind the *Warm-e-Jigar Barid Saudawi/ Warm-e-sulb* is the imbalance of the temperament of liver and accumulation of mawad-e-fasida (morbid material). As per Unani therapeutic rule, balance of the temperament can be achieved by counteracting the effect of pathological temperament present at the time of disease with medicines, diet and regimenal therapy. Gule Surkh(Rosa damascene), Zafran(*Crocus sativus*)), Kasni (*Cichorium intybus*), Sumblul Teeb *(Nardostachys Jatamansi),* Anisoon*(Pimpinella Anisum),* Tukhm-e-Kasoos*(Cucuta reflexa)* and other have been proven as strong hepatoprotective and anti-oxidants agents.

JH/IASTAM2022/PP106

Medicinal plants used by traditional healers in Senapati: a multiregional ethnobotanical study

Ojit Keithellakpam[1*], Thokchom Biona[1], Nanaocha Sharma[1], Pulok Kumar Mukherjee[1]

Institute of Bioresources and Sustainable Development (An autonomous Institute of Department of Biotechnology), Takyelpat, Imphal -795001, Manipur, India
Corresponding author: ojit1999@gmail.com, 9862733419

Medicinal herbs have been utilised to cure a variety of health conditions for generations, and despite modern medicine's huge advancements, man continues to utilise this ancestral wisdom. The tribal communities of North-Eastern region of India exhibits huge varieties of medicinal plants and rich indigenous traditional knowledge. The aim of the study is to carry out the ethnopharmacological documentation on significant ethnomedicinal plants of indigenous communities of Senapati district, Manipur. The benefits, importance and coverage of ethnomedicine were expressed through several quantitative indices including Informant Consensus Factor (ICF), Use Value (UV), Frequency of Citation (FC), Relative Frequency of Citation (RFC). A total of 84 plant species under 42 families were documented from 23 informants. The highest ICF value was 1.00 for kidney diseases, general health or body weakness and oral care followed by skin diseases (0.76). *Rhus semialata* (0.52) have the highest relative frequency of citation value followed by *Zingiber officinale* (0.39), *Psidium guajava* (0.39), *Gynura cusimbua* (0.35), *Oroxylum indicum* (0.35). *Alpinia nigra*, *Centella asiatica*, *Curcuma angustifolia*, *Rhus semialata*, *Emblica officinalis*, *Curcuma longa*, *Allium odorum*, *Mentha spicata*, *Cinnamomum zeylanicum*, *Alocasia indica* and *Blumeopsis flava* were found to have 100% fidelity level. The present study allowed us to inventory the medicinal plant used in the Senapati District, Manipur (North-East India). These plants could be a real natural reservoir of new biomolecule with a potential pharmacological activities.

JH/IASTAM2022/PP107

Development and characterization of second generation pamam dendrimers for the enhancement of bioavailability of efavirenz

Pande Muskan*, Shelke Karishma, Mahajan Nilesh, Kharwade Rohini

Dadasaheb Balpande College of Pharmacy, Nagpur (MS), India. 440037
***Corresponding author:** muskanp2107@gmail.com

Efavirenz **(**EFV) is a first-choice of non-nucleoside reverse transcriptase inhibitor used in the HAART of the infection by the HIV. Unfortunately, it exhibits low solubility in aqueous gastric fluid and imparts low bioavailability. Therefore, the present investigation was aimed at exploring dendrimer-mediated solubilization and formulation development followed by *in vitro, in vivo* assessment of EFV PEGyaled PAMAM G2 dendrimers (PPG2E). PEGylated PAMAM G2 dendrimers (PPG2) was synthesized and used to encapsulate EFV to study its solubility and *in vitro* release for potential bioactivity enhancement. It was characterized by FTIR and 1H NMR. All pharmacokinetic parameters of PPG2E including bioavailability were also find out using Wistar rats by single intraperitoneal route of administration. Formulation of PPG2E were confirmed by FTIR and 1H NMR techniques. The % drug content of PPG2E was found to be 94.26% with entrapment efficiency 72.33%. *In vitro* drug release study of PPG2E shows 96.867% drug release at 120 hrs. From pharmacokinetic study C_{max}, AUC and MRT for free EFV were 1.41 (ug/ml), 2.5639 (µg/ml)*hr and 6.23 hr respectively and for PPG2E were 10.6856 (ug/ml), 13.3639 (µg/ml)*hr and 23.23 hr respectively. It observed that all pharmacokinetic parameters were improved 2 times as compared to free EFV. Therefore, it was concluded that PPG2 were capable of encapsulating and increasing the solubility of EFV. It also improves all pharmacokinetic parameters as compared to plain drug.

JH/IASTAM2022/PP108

Metabolomic Profiling and Nephroprotective potential of Asl-us-soos (*Glycyrrhiza glabra* L.) root in cisplatin-induced nephrotoxicity

Parakh Basist[1,2,3], Sayeed Ahmad[1,2*]

[1]Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India-110062

[2]Department of Pharmacology, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India-110062

[3]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology)
***Corresponding author:** 9891374647; sahmad_jh@yahoo.in

Asl-us-soos is an important traditional plant in the Unani system of Medicine due to its multiple pharmacological properties. The lack of sufficient scientific evidence prompted the analytical investigation as well as nephroprotective potential of roots of *Glycyrrhiza glabra* L. The present study was conducted to investigate the phytochemical analysis and demonstrate nephroprotective potential of root extract of *G. glabra* L. using rodent model. The HPTLC analysis was carried out to standardize the methanolic extract of roots of *G. glabra* (GGE) using glycyrrhizin as a marker. The metabolite profiling of GGE was carried out using UPLC-MS to identify bioactive compounds as well as for confirmation of identified marker. Further, nephrotoxicity was induced in Wistar rats by injecting CP (6 mg/kg, bw, i.p.) at single dose. The efficacy of GGE as nephroprotective was then evaluated at different doses. Further, kidney, liver, anti-oxidant, -inflammatory and –apoptosis biochemical markers as well as histopathological alterations were evaluated. Phytochemical analysis by HPTLC and UPLC-MS revealed presence of various bioactive constituents. Further, administration of CP caused significant ($P<0.001$) elevation in biochemical, inflammatory, oxidative stress, caspase-3 as well as histopathological changes in kidney tissue. Pre-treatment with GGE attenuated the elevated biochemical markers significantly as well as improvement in histopathological damage and showing comparable results to standard. Present study concluded the nephroprotective potential of GGE which supports the traditional claim of *G. glabra* roots in various kidney and its related disorders. The nephroprotective activity may be attributed to its anti-oxidant, -inflammatory, and –apoptosis effects. Thus, it holds promising potential in management of nephrotoxicity.

JH/IASTAM2022/PP109

Unravelling the nourishing values besides therapeutic properties of the Umbelliferous fruits: A neoteric dual approach

Parth Sharma[1*], Twinkle Sharma[1], Manpreet Kaur[2], Madhukar Garg[1]

[1]Chitkara College of Pharmacy, Chitkara University, Rajpura- 140101, India

[2]GHG Khalsa College of Pharmacy, Gurusar Sadhar-141104, Ludhiana, India
***Corresponding author**: 8950446968, parthsharma6843@gmail.com

Multifarious bioactive plants are well known to possess the diverse pharmacological actions preventing the prevalence of different metabolic diseases nevertheless, thy also possess some other health benefits excluding medicinal effects. Likewise, in addition to it, certain members of umbelliferae have been explored to determine pronounced therapeutic and food values in align to their traditional claims. Numerous umbellifers are present and widely utilized owing to their potential medicinal properties being extensively availed by populace. Although, the present study has emphasizedthe additive or synergistic and efficacious dietary values and nutraceutical properties of the certain mentioned members. To determine the dual action, *Foeniculum vulgare* (fennel), *Coriandrum sativum* (Coriander), *Ferula foetida* (Asafoetida),*Trachyspermum ammi* (Ajwain) and *Pimpinella anisum* (Anise fruit) were spotlighted and surveyed in different literature and databases. The brought out work disseminates the information after undergoing the through literary analysis doneby searching the Google Scholar, PUBMED, EMBASE, as well as other sources of literature available at the Chitkara University library that confers the deep insights in respective domain. The data compiled in study revealed that the mentioned herbs possess the notable tendency to function as the duo encompassing the therapeutic and nutritive food values and related health benefits as well. It can be anticipated that the survey attempted will provide the updated piece of information attributable to its bioactive characteristics which can be utilized against various ill manifestations in approaching time owing to their dual or multiple applicability with proven benefits at industrial and research scale.

JH/IASTAM2022/PP110

In vitro antidiabetic activities and GC-HRMS phytochemical analysis of *Texas lantana* extract

Piyush Chahal*, Pradeep Kumar, Rashmi, Garima Gupta

Department of Pharmacy, Monad University, N.H. 9, Delhi-Hapur Road Village & Post Kastla, Kasmabad, Pilkhuwa, Uttar Pradesh 245304
***Corresponding author**: kumarpradeep1700130@gmail.com

To identify different phytochemical components in *Texas lantana* leaf extract using GC-HRMS and assess their antidiabetic potential employing in vitro assays. The extraction was carried out with a solvents ethanol using the soxhlet apparatus. The concentrated and dried extract was subjected to GC-HRMS analysis and also the antidiabetic activity was assessed by employing standard in vitro techniques. GC-HRMS analysis confirmed the presence of different phytochemicals in leaf extracts of *Texas lantana*. The major phytoconstituents were found to be Oleic acid, 1-Tetracosanol, Glafenine, Octadecanal, 4-Piperidine propanoic acid, α –D-mannofuranoside 8,11,14-Eicosatrienoic acid, 1-Hexacosanol 7-Tetradecanal and Physalin G. In vitro antidiabetic studies suggest that the ethanolic extract exhibited significant activity compared to the standard compound. The investigation confirms that ethanolic extract exhibited good antidiabetic activity. Additional studies on needed for purification, characterization and structural elucidation of bioactive compounds from ethanolic extract & also confirm its antidiabetic property by in vivo studies. This study provides scientific evidence that leaves of *Texas lantana* has anti-diabetic efficacy. Thus, considering its relative hypoglycemic potency, they may serve as useful therapeutic agents for treating diabetes.

JH/IASTAM2022/PP111

Effect of Angiotensin receptor blocker and Probiotics in caffeine-induced anxiety model

Pooja Verma*

GD Goenka University
Corresponding author: pujaaa.verma@gmail.com

The gut microbiota has been linked to the pathogenesis of stress-related illnesses in a growing number of research. Chronic stress may alter behaviour, cognition, biochemistry, and the gut flora. Gut bacteria may impact brain and behavior by communicating with the host through the microbiota–gut–brain axis (which mostly comprises immunological, neuroendocrine, and neurological pathways). It is thought that taking probiotics might help with persistent stress-induced depression. It is thought that taking probiotics might help with persistent stress-induced depression. To test this idea, we review the probiotic *Lactobacillus helveticus* in reducing anxiety. The axis of HPA is a complicated network pathways of neuroendocrine and feedback loops that maintains the physiological balance. Long-term changes in neurotransmitter and neuropeptide production in the CNS, including synthesis of glucocorticoid hormone in the peripheral, might occur from unusual development of the HPA axis. These alterations, when combined, have the potential to affect behavioral, neuroendocrine, autonomic, and metabolic functioning in adults. This review also focuses on how the HPA axis is regulated and how its component is evolved.

JH/IASTAM2022/PP112

The neuroprotective potential of antioxidants

Pradeep Kumar*, Piyush Chahal, Garima Gupta

Department of Pharmacy, Monad University, N.H. 9, Delhi-Hapur Road Village & Post Kastla, Kasmabad, Pilkhuwa, Uttar Pradesh 245304
***Corresponding author:** kumaranuj543210@gmail.com

The brain is vulnerable to serious oxidative damages due to its high energy requirements, rich lipid content, and poor antioxidant capability. Through oxidative alterations in the brain associated with neurodegenerative disorders, reactive oxygen species increase the susceptibility to neuronal damage and functional impairments. The physiological actions of antioxidants in the brain are regulated by cellular defense mechanisms, intracellular signaling, and excessive and abnormal amounts of reactive oxygen species or overload of metals. Multiple preclinical and clinical trials have examined single or complex antioxidant chemicals that target oxidative stress, redox metals, and neuronal cell death as an alternative treatment approach for battling oxidative stress linked to neurodegenerative disorders. In this article, we provide an overview and general analysis of several antioxidants and offer viable antioxidant treatment regimens for the neuroprotection of the brain against oxidative damage.

JH/IASTAM2022/PP113

1,3,5 and 1,2,4-triazines as potent scaffold for molecules potentially attenuating breast cancer cell lines

Pragya Dubey*

Department of Pharmaceutical Chemistry, Delhi Institute of Pharmaceutical Sciences and Research, Sector 3, Pushp Vihar, New Delhi
***Corresponding author:** pragyadubeysip@gmail.com

Breast cancer is diagnosed in around 2.3 million women in year 2020. Owing to the alarming rise in the incidence of breast cancer, newer small molecules with targeted therapy is the need of the hour. A plethora of small molecules have been approved by the USFDA in the past few years. Triazines have been reported to possess variety of biological activities and have been widely investigated as a scaffold for developing newer anti-tumor agents with an ability to inhibit various types of cancers including breast cancers. A limited number of triazine derivatives are also been clinically used for treatment of breast cancer. A detailed study of the literature available on various derivatives of triazines with primary applicability as cytotoxic to breast cancer cell was carried out and is presented in this review. A total of 66 structurally diverse triazines have been reported in this review along with the structural features responsible for activity against various breast cancer cell lines. The primary amino residues to which the triazine based molecules bind in the estrogen receptor alpha and epidermal growth factor receptor 2, as found in various docking studies has also been detailed in the review.

JH/IASTAM2022/PP114

Reporting and signal management process for the herbal medicine (St. John Wort)

Prakhar Lambhate*

School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi 11062, India
Corresponding author: 9479722284, prakharlambhate@gmail.com

Most of the People do experience unwanted Side Effects when they take Medications prescribed for any particular indication, so they prefer Herbal Drug (eg. St. John Wort) on recommendation of relatives, friends, while if those side effects are left untreated they can cause some serious Adverse effects like Hospitalization, any type of Disability, Life Threatening condition, and even Death in some cases. The Reporting of Such adverse events is necessary and that is done by the Domain called as PHARMACOVIGILANCE.

Pharmacovigilance is the Collection, Collation, Analysis, Detection and Reporting of Adverse Effects. It includes Signal Detection, Signal Evaluation, Signal Prioritization. This will Mainly Focus on Different Process of Signal Detection, Evaluation and Prioritization in the field of Pharmacovigilance. The databases used were Google Scholar, PubMed, Science Direct, Elsevier, and textbooks. Original articles were included, and information was collected using keywords like “Pharmacovigilance” “Reporting” “Signal Detection” “Signal Evaluation” “Signal Prioritization”.

JH/IASTAM2022/PP115

Therapeutic effect of Myricetin and its nanoformulation against triple negative breast cancer via PI3K/Akt/Mtor pathway

Preeti Sharma[1,2], Mohd. Akhtar[1], Mohammad Ahmed Khan[1], Shubhra Chaturvedi[2*]

[1]Department of Pharmacology, School of Pharmaceutical Education and Research, Jamia Hamdard, Delhi, 110062

[2]Division of Cyclotron and Radiopharmaceutical Sciences, INMAS, DRDO, Timarpur, Delhi, 110054
Corresponding author: shubhraiit@yahoo.com, 9810538420

Myricetin is a naturally existing flavonol and exerts many biological properties also including anticancer property like in pancreatic, hepatic, skin and lung cancer through various pathways like caspase-3, Bax surviving, Pak1 and many more. However, Myricetin limitedly used as a therapeutic agent due to its low solubility in water. Hence myricetin was incorporated in to a nanocarrier system to improve its water solubility and bioavailability. Triple negative breast cancer (TNBC), accounts 20% of all breast cancer cases related to poor clinical results. Recent research suggests that inhibition of PI3K/AKT/mTOR pathways can be an effective strategy against TNBC and myricetin is reported to act against these pathways. Therefore, the aimed of this study was to develop myricetin nanoformulation and to evaluate its anticancer activity against TNBC cell line. Myricetin nanoemulsion was successfully developed and characterized. Anticancer activity evaluated in-vitro through MDA-MB-231 TNBC cell line. Transmission electron microscopy (TEM) showed circular shaped nanoemulsion with particle size less than 100 nm, PDI was less than 0.3 and zeta potential value was -4 mV. Myricetin nanoemulsion was thermodynamically stable. Drug content was above 98%. In-vitro assay showed that myricetin having anticancer activity against TNBC cell line with IC50 value at 112 µM at different concentrations. Immunoblotting showed inhibition of Akt protein. Hence, this data suggested that Myricetin and its nanoemulsion formulation can be proved as effective therapeutic treatment against rare TNBC.

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Evaluation of memory enhancing activity of *Morus alba* fruits and leaves extract as cholinesterase inhibitors on experimental animals

Priya Saini*, Lalit Parihar

R.V. Northland Institute, G.B. Nagar Dadri
Corresponding author: priyasaini7017@gmail.com

Memory is a way to prepare enormous amounts of information. The information in this section covers a wide range of aspects such as what we see, sounds, or centrality. There are several causes of memory impairment, including aging, drugs, trauma, stress, insufficient sleep, vitamin deficiencies, brain cancer, and other mental disorders like depression, bipolar disorder, schizophrenia, and disturbances, as well as various other diseases. Due to limitation of the current therapy against Memory problem, the novel regimen to improve memory disorder is required. On the pathophysiology of Memory and the benefit against memory impairments of the medicinal plants possessing neuroprotective effect, the health benefit of *Morus alba* leaves and fruits for enhancement in memory was focused. The proposed study was aimed to study the memory enhancing activity of aqueous extracts of *Morus Alba* fruits and leaves in experimental animals i.e. scopolamine induced memory impairement in rats. Rats were administered the Scopolamine to induce Memory defect and then treated with *Morus alba* fruits and leaves aqueous extract at 200, 400, 800 mg/kg, p.o. for30 days. *Morus alba* fruits and leaves aqueous extract was used for treatment and Donipizil used as standard. Total 6 groups was design each contain 5 rats. Morris water maze, Elevated plus Maze, Open Field test for studying the memory enhancing behavior and the Photoactometer used for locomotors activity. Brains were removed, homogenized and subjected to biochemical analyses of acetylcholine (ACh) and acetylcholinesterase (AChE), antioxidants like glutathione peroxides (GPx) was also included for comparison purposes with standard. Aqueous extract of *Morus alba* showed significantly increased the percentage of time spent and number of entries in open arm in elevated plus maze model. In Morris water maze model, the extracts produced significant increase in time spent in water area. In Open Field test, the extract showed significant increase in number of squares crossed, all of which are demonstrations of exploratory behaviour. In locomotor activity evaluated with photoactometer in lower cut off number point out from extract treated groups as per donipizil treated standard group. The findings were accompanied by elevation of ACh (15%) and GPx (≥ 12%) Aqueous extract of *Morus alba* showed prominent memory enhancing activity but the best result obtained with 800 mg/kg dose of aqueous extract of *Morus alba* in experimental models. The present research suggests that aqueous extract of *Morus alba* may be a therapeutic candidate for the treatment of memory impairement disorder. Present study also suggests a role of increased in acetylcholine, protection of
hippocampus neurons and give antioxidant effect in the attenuation of scopolamine induced memory impairement by *Morus alba*.

JH/IASTAM2022/PP117

Development and validation of HPTLC method for simultaneous estimation of α-amyrin, betulin, ursolic acid and β-sitosterol in *Leptadenia reticulata* & *Marsdenia tenacissima*

R. Sahaya Mercy Jaquline*, Vidhu Aeri

Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India-110062
Corresponding author: jackmercyrob@gmail.com

HPTLC, a top-notch technique in the field of analysis, is quite irreplaceable when it comes to identification and standardization of medicinal plants. *Marsdeniatenacissima* and *Leptadeniareticulata* have claimed traditional uses like anti-cancer, anti-inflammatory, anti-depressant, hepatoprotection, etc. with few similar phytoconstituents. The study aims a precise and validated HPTLC densitometric method development for the identification of α-amyrin, β-sitosterol, betulin, and ursolic acid in *Marsdeniatenacissima* and *Leptadeniareticulata* by maceration with alcohol and hydroalcoholic extracts. The developed method was evaluated by linearity, range, accuracy, precision, limit of detection, limit of quantification, robustness, and specificity. The markers were subjected to ascending development with toluene: ethyl acetate: glacial acetic acid at a ratio of 8:1.5:0.5-v/v/v, air dried and derivatized with anisaldehyde-sulfuric acid. The Rf values of the markers were found to be 0.63 (α-amyrin), 0.52 (β-sitosterol), 0.64 (betulin), and 0.48 (ursolic acid) for *L. reticulata* and 0.55 (α-amyrin), 0.45 (β-sitosterol), and 0.57 (betulin) for *M. tenacissima*. The presence of ursolic acid in *M. tenacissima* extracts was not clearly observed, although the quantification indicated its presence. Also, high quantification of markers was observed only in the alcohol extracts of both the plants. The chromatographic results suggest that the developed method is suitable for all the four markers and can be simultaneously identified in both the plants.

JH/IASTAM2022/PP118

Benzothiazole-based hybrid conjugates of bioactive ligands as anti-tubercular agents: Synthesis and In-silico screening for DPrE1

Rabiya Samoon[1], M.Z. Abdin[2], Syed Shafi[1]*

[1]Department of Chemistry, School of Chemical and Life Sciences, Jamia Hamdard, New Delhi-110062, India

[2]Centre for Transgenic Plants, Department of Biotechnology, School of Chemical and Life Sciences, Jamia Hamdard India, New Delhi-110062, India
***Corresponding author**: syedshafi@jamiahamdard.ac.in, 9990806873

Among new promising molecules that have proved efficacy against DPrE1, benzothiazole-based compounds have emerged as potential anti-tubercular agents. Based on TCA-1, a lead anti-tubercular molecule reported recently, in this study, we present synthesis, in-Silico studies and anti-tubercular evaluation of a series of benzothiazole-based hybrid conjugates of bioactive ligands. Although the chemotherapy for tuberculosis has been reduced to six months with the combination therapy of four different drugs, it is still an alarming serious problem due to emergence of resistance to currently available chemotherapeutic agents. Hence, this leads to more lethal forms of drug-resistant tuberculosis (MDR-TB, XDR-TB), which signifies an increased demand for the development of new chemotherapeutic agents and new targets to combat tuberculosis. For the development of new leads and potential anti-tubercular drug candidates, cell wall biosynthetic pathways have emerged as promising drug targets. Recently explored DPrE1 (decaprenylphosphoryl-β-D-ribose-2′-epimerase) enzyme of *Mycobacterium Tuberculosis* has been reported as a highly potential drug target. Among new promising molecules that have proved efficacy against DPrE1, benzothiazole-based compounds have emerged as potential anti-tubercular agents. Most notably, TCA1 is a lead anti-tubercular molecule reported recently. TCA1 was identified via cell-based phenotypic screening and is an active anti-tubercular agent against replicating and non-replicating strains of *Mycobacterium tuberculosis*. TCA1 specifically targets DPrE1 enzyme of the mycobacterium tuberculosis. Previously, our group reported 2-mercaptobenzothiazole-1, 2, 3-triazoles anti-tubercular agents as potential non-covalent DPrE1 inhibitors.

Based on the broad spectrum of anti-tubercular properties of benzothiazole moiety of TCA1 and in continuation of our efforts to develop some new benzothiazole-based inhibitors, we aim to synthesize benzothiazole-based hybrid conjugates of bioactive ligands. Benzothiazole motif being the primary scaffold, the modifications was concentrated around this bicycle ring system following the hybrid conjugation strategy of bioactive ligands (acids and amides) through an amino group linker. A library of 28 hybrid conjugates of bioactive

ligands was synthesized and evaluated for the anti-tubercular activity against M. tuberculosis H37Ra strain by broth micro-dilution assay method. Synthesized hybrid compounds were characterized by NMR (^{1}H and ^{13}C), LCMS and FT-IR. Compounds wee also evaluated for anti-tubercular activity by broth micro-dilution assay. Among all the synthesized compounds, two molecules were found to have excellent activity with a MIC range of 3.9 µg/mL. Further, molecular docking was utilized to ascertain the mode of binding of the synthesized molecules to DPrE1 enzyme. These conjugates show potential non-covalent interaction with the DPrE1 enzyme. The *in silico* study asserted that the synthesized most active scaffolds reside well (with docking scores from -2.56 to -3.73) in the DPrE1 binding site similar to that of the reported lead compound TCA-1(docking score -6.124). Superimposition of all these ligands with TCA-1 in their docked pose describes that all the poses of all the synthesized ligands are overlapping with TCA-1 pose and interacting non-covalently with DPrE1. The synthesized compounds show strong hydrogen bonding and lipophilic interactions with the receptor site of the protein similar to the lead compound TCA-1. These synthesised compounds can result in the secondary leads with better pharmacological credentials. The study may result in the discovery of novel non-covalent DPrE1inhibitors which is an emerging field in tubercular drug developmentles are potential anti-tubercular leads against DPrE1.

JH/IASTAM2022/PP119

Neuroprotective activity of Carveol via Nrf2 and NF-kB pathway

Ramrattan Kumawat[1], Ajit Kumar Thakur[1*]

Neuropharmacology Research Lab., School of Pharmaceutical Sciences, Delhi Pharmaceutical Sciences and Research University, New Delhi-110017
Corresponding author: 9935824795, ajit.thakur@dpsru.edu.in

Carveol is a monocyclic monoterpenic alcohol isolated as a natural compound from some important plant species and this compound shown for its efficacy in various diseases and disorders such as antitumor, antimicrobial, neuroprotective, vasorelaxant, and it was reported that this compound may act through by targeting pathways such as nrf2 and NF-kb regulating the antioxidant and neuroinflammatory mediators and showed significant improvement in some neurological disorders have attracted considerable attention as pharmacological treatments in targeting other neurodegenerative disorders. The aim of the review paper was to consolidate the already established therapeutic effect of Carveol in Neurological Disorders via Nrf2 and NF-kB Pathway. Plethora of literature and original research papers available relevant to the above compound were thoroughly investigated via Pubmed and other reliable source demonstrating the protective activity of Carveol in Neurological Conditions. Evidences accumulated at molecular levels after extensive reviewing has shown the neuroprotective activity of Carveol and promising neurotherapeutic effects against oxidative stress and inflammation. This compound has shown to be effective in Psychiatric Disorders like Depression as well. Hence, the monoterpene Carveol has been proved to be ameliorating agent in multiple neurological diseases by regulating the ROS and inflammatory mediators which plays a key role in pathophysiology. Several other unstudied neurological disease/disorders can be treated by targeting the same pathway.

JH/IASTAM2022/PP120

Development of monograph, chemoprofiling and network pharmacology studies of a nephroprotective formuation Majoon-e-Falasifa

Monalisha Samal[1,2], **Rehan Malik[1],** Ruqaiya[1], Yash[1], Sayeed Ahmad[1,2]*

[1]Bioactive Natural Product Laboratory, Department of Pharmacognosy and phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India

[2]Centre of Excellence (CoE) in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi-110062, India
***Corresponding author:** 9891374647; sahmad_jh@yahoo.co.in

Majoon-e-Falasifa is a semi solid polyherbal formulation of the Unani system of medicine and is conventionally used in the management of kidney dysfunctions. In the present study the nephroprotective potential of the formulation has been determined using *in-vitro* and *in silico* approach. Ethylacetate extract of formulation was prepared and subjected to determination of total phenolic and flavonoid contents. Qualitative estimation was carried out using preliminary phytochemical screening and TLC fingerprinting whereas, quantification of active biomarkers by HPTLC. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective biomarkers at molecular level. Complete monograph of the nephroprotective formulation *Majoon-e-Falasifa* was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram gallic acid and quercetin respectively. TLC profile was developed and quantification of active biomarkers was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of the plant at molecular level and network was established. The conducted study scientifically validates the traditional knowledge of nephroprotective potential of the aforementioned plant/formulation and can be explored further atpreclinical and clinical levels.

JH/IASTAM2022/PP121

Development of monograph, chemo profiling and network pharmacology studies of a nephroprotective plant: *Aegle marmelos* (Bilwa)

Parakh Basist[1,2], **Riddhi Gupta**[1], Naima Sultan[1], Mohammad Hamza[1], Sayeed Ahmad[1,2*]

[1]Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India-110062

[2]Centre of Excellence (CoE) in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi, India-110062
***Corresponding author**: 9891374647, aahmad_jh@yahoo.co.in

Bilwa (*Aegle marmelos*) commonly known as Bael and has been in use in Indian traditional medicine, Ayurveda and Unani since antiquity. Leaves, stem, fruits and roots of this tree are used as medicines against various human ailments. Marmelosin is one of the main phytoconstituent in *A. marmelos* with its potential pharmacological activities such as hypoglycemic, anti-inflammatory, anti-cancer, anti-diabetic, and anti-oxidants. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per the USP standards. Methanolic extract of powdered drug was prepared and subjected to determination of total phenolic and flavonoid contents. Qualitative estimation was carried out using preliminary phytochemical screening and TLC fingerprinting whereas, quantification of the active biomarkers by HPTLC. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. In silico network-pharmacology was carried out to determine the nephroprotective biomarkers at molecular level. Complete monograph of the nephroprotective plant *A. marmelos* fruit was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram of gallic acid and quercetin respectively. TLC profile was developed for identification and quantification of active metabolites was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. In silico studies reflected nephroprotective effect of metabolites and network was established. The conducted study was performed for standardization of the aforementioned plant and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP122

Uroscopy and Greeco-Arab physicians: A historic perspective

Roohi Azam[1*], Azhar Jabeen[2], Shazia Jilani[2]

[1]Department of Mahiyatul Amraz, School of Unani Medical Education & Research (SUMER), Jamia Hamdard, New Delhi,

[2]Department of Moalajat, School of Unani Medical Education & Research (SUMER), Jamia Hamdard, New Delhi,
Corresponding author: 9015406236, dr.roohiazam@gmail.com.

The relation between disease and urine was recognized by physicians since the earliest civilization BC. Laboratory medicine began thousands of years ago with the analysis of human urine as *uroscopy,* which later was termed *urinalysis*. The word "uroscopy" derives from two Greek words: "*ouron,"* which means urine and "*skopeoa,"* which means to 'behold, contemplate, examine, inspect. Ancient scholars considered urine as a important specimen for knowing the well being and proper functioning of body. They spoke of urine as a window to the body's inner workings and reflected different diseases. Hippocrates (460–355 BC) hypothesized that urine was a filtrate of the humors in the body, originating from the blood filtered through the kidneys. He was first to described bubbles on the surface of fresh urine as a sign of long-term kidney disease and associated urinary sediment with fever. Galen theorized that urine represented, not a filtrate of the four humors and overall condition, but rather, a filtrate of the blood and used the phrase "*diarrhea of the urine"* to describe excessive urination. Theophilus, a seventh-century physician who wrote the first manuscript on urine called "*De Urinis"*, determined heating urine would precipitate proteins, documenting proteinuria as a disease state. Ibn Sina (980-1037 AD) in his book Al-Qanun Fil Tibb. described urinalysis in scientific manner and recommended different guidelines to be followed prior to the uroscopy. By uroscopy many theories arose that not only diagnosed the pathological conditions, but also helped to predict some upcoming ailments also. The principles of detecting illnesses through urine by the ancient physicians opened doors for chemical, microscopic and molecular studies of present times. The aim of this paper is to evaluate the concept of uroscopy and its various aspects in view of different Greeco-Arab scholars in detail.

JH/IASTAM2022/PP123

Evidence based pain relieving effects of cupping therapy in osteoarthritis

Saba Ansari*, Shazia Jilani, Nuzhat Praveen, Azhar Jabeen

Department of Moalajat, School of Unani Medical Education and Research, Jamia Hamdard, New Delhi, 110062, India
Corresponding author: sababansari7g@gmail.com, 9811795123

Osteoarthritis (OA) is a public health issue in an aging society. It is a chronic musculoskeletal disorder of the movable joints, such as neck, knee and hip joints. It affects around 250 million people around the world. Responsible risk factors being age, gender, increasing BMI, occupation and prior trauma. Globally, hip and knee OA was ranked as the 11th highest contributor to global disability and 38th highest in DALYs. *Hijamah bil shart* (cupping therapy) is recommended by eminent Unani physicians for the management of *Waja-ul-Mafasil* (arthritis). Based on modern parameters, like VAS, KOOS, WOMAC, *Hijamah* (cupping therapy) has been proven beneficial to alleviate pain as a marked effect in improving the quality of life. *Ḥijāmah* can be defined as a minor surgical excretory procedure that creates superficial skin scarification to open skin barrier and creates a pressure gradient and a traction force across the skin and underlying capillaries to drain interstitial fluids and enhances blood clearance and waste excretion through skin. Various published clinical trials showed the efficacy of *Ḥijāmah* in the management of OA. Though, the effect showed by some clinical trials was short term Hence, it is suggested that rigorous, well-designed, controlled, randomized and long duration follow up clinical trials on large sample size are to be conducted and researchers to establish the efficacy of *Ḥijāmah*.

JH/IASTAM2022/PP124

Antibacterial activity and phytochemical analysis of methanolic extract of *Andrographis paniculata*

Sageer Abass[1,2,3], Syed Akhtar Husain[2], Sayeed Ahmad[3*]

[1]Department of Biotechnology, Jamia Millia Islamia, New Delhi 110025, India

[2]Department of Biosciences, Jamia Millia Islamia, New Delhi 110025, India

[3]Bioactive Natural Product Laboratory, SPER, Jamia Hamdard, New Delhi, 110062, India
***Corresponding author:** sahmad_jh@yahoo.co.in, 9891374647

Infectious diseases are one of the world's greatest challenges, with about 57 million people dying each year because of them. Several novel antibiotics have been developed by pharmaceutical companies over the last three decades, but the harmful effects of these medications, as well as the widespread growth of multidrug resistant (MDR) microorganisms, are restricting their usefulness. Medicinal plants have been used to treat human diseases for thousands of years because they contain a wide range of chemical substances that have a specific physiological effect on the human body. Herbal medicine is considered as an essential source of natural products and useful for eliminating serious diseases. The aim of the study was to investigate antibacterial activity and phytochemical analysis of methanolic extract of *Andrographis paniculata*. Soxhlet apparatus was used for the extraction process. Broth microdilution, well diffusion and time kill study was used to investigate the antibacterial activity. HPTLC and GC-MS was used for the phytochemical analysis. Plant extract were found susceptible to *E. coli* and *S. aureus,* time-kill study showed that the extract had a bacteriostatic effect. HPTLC shows the presence of diterpenoid compound Andrographolide, furthermore, the results of GC-MS indicated that the extract contained these major compounds erucic acid, 4-(4-ethylcyclohexyl)-1-pentyl-cyclohexene, cis-vaccenic acid, 9-octadecenoic acid, palmitic acid, 2,4-Di-tert-butylphenol, eugenol and D-limonene. The findings of this study have shown that *Andrographis paniculate* extract are good sources of antibacterial compounds and can be used for treating infectious diseases caused by *E. coli* and *S. aureus.*

JH/IASTAM2022/PP125

Clinical evaluation of the efficacy of Unani pharmacopeal drugs in the management of Cervicitis (Iltehab e Unqur Reham)

Saman Anees[1*], Maaz Naqvi[2], Suboohi Mustafa[3], Suhail Fatima[1]

[1]Department of Amraz e Niswan Wa Qabalat, SUMER, Jamia Hamdard, New Delhi

[2]Dept. Pharmacology, HIMSR, Jamia Hamdard,New Delhi.

[3]Dept. Amraz e Niswan Wa Qabalat, Aligarh Muslim University, Aligarh
[*]**Corresponding author:** 8287144961, samananees@rocketmail.com

Cervicitis is one of the commonest disease of female genital tract affecting more than half of all women at some point during their reproductive life and has been seen in 80% of women with any gynaecological complaint. It refers to the inflammation of the cervix which may be acute or chronic with the clinical manifestation of vaginal discharge, low backache, lower abdominal pain, dysuria and dyspareunia. The aim of the study was to evaluate the clinical efficacy of Unani pharmacopeal drugs in the management of cervicitis. A randomized clinical study was carried out at the Department of Amraz e Niswan wa Atfal, Aligarh Muslim University, Aligarh. Thirty patients of 18-40 years of age with chronic cervicitis were selected and intervened with Unani formulations prepared from *Joshanda Mazu* (Quercus infectoria) administered locally in the form of intra vaginal tampon (pessary) for 7 consecutive nights after menses along with the oral administration of *Arq-e mako* and *Arq-e-kasni* for the same duration. Pre and post treatment analysis was done on subjective and bjective parameters and were assessed by paired t-test. These Unani formulations showed highly statistically significant improvement in all the subjective ($p<0.001$) and objective ($p<0.001$) parameters of chronic cervicitis after completion of treatment. The study results suggest that the trial formulations are quite effective and hence can be used as an alternate therapy in the management of cervicitis. No Adverse effects were noted during the complete course of the study trial.

JH/IASTAM2022/PP126

Identification and characterization of phytoconstituents through molecular modelling as an antifibrotic agents

Samiksha Jeena[1], Srashti Maheshwari[2], Ajay Sharma[1*], Kalicharan Sharma[1*]

[1]Delhi Pharmaceutical Sciences & Research University (DPSRU), Mehrauli-Badarpur road, New Delhi, 110017, India

[2]KIET School of Pharmacy, KIET Group of Institutions, Delhi-NCR, Ghaziabad, 201206, India
***Corresponding authors**: 9953539398, sharmakcpt@gmail.com, 9575848894, ajaysharmapharma1979@gmail.com

Due to multiple phytocomponents present in herbs, it is very difficult, tedious, costly and time- consuming process to isolate compounds of any plant. Hence in the present study, it was proposed to use molecular docking studies to pinpoint the most potential molecules responsible for antifibrotic activity as treatment for post covid complications. The proposed study aimed to identify the phytoconstituents through molecular modelling and characterize the extracted phytoconstituents of *Camellia sinensis*. The in silico molecular modelling studies was performed using maestro tool of Schrödinger suite. We have used public domain database (coconut approx. 2 lacs) and knowledge base library (1000 phytochemicals) (HTVS10%, SP10%, XP10%) against ASK1 Receptor and do the molecular modeling and we get 201 hits. After that we visualize these hits and selected 9 phytomolecules qualified the test for being a good antifibrotic agents. Then we procure the leaves of *Camellia sinensis* in which maximum number and amount of selected phytomolecules are present through the vendor and conduct extraction and characterization of the phytomolecules. And the biological activity of extracted compounds against ASK1 enzyme as anti- fibrotic agents are under process. The virtual screening resulted in 9 hits which were docked against ASK1 enzyme. The hit compounds displayed docking score of -10.261 (Quercetin), -9.934 (Myricetin) -9.428 (Luteolin), -9.271 (Isorhamnetin), -9.250 (Morin), -9.24 (Cyanidin), -9.023 (Dihydromyricetin), -8.831 (Kaempferol), -8.529 (Apigenin) compared to standard Ligand Selonsertib (-7.32) [Phase III clinical trial drug]. The results conclude that the confirmation of in silico data may be helpful to get good lead candidate for anti-fibrotic activity.

JH/IASTAM2022/PP127

Antifungal efficacy of Thymol in *Candida albicans*

Sana Kauser, Nikhat Manzoor*

Medical Mycology Lab, Department of Biosciences, Jamia Millia Islamia, New Delhi 110025, India
***Corresponding author:** 8750522156, nmanzoor@jmi.ac.in

Candidiasis has become a significant public health concern in recent years. The fungistatic nature of conventional azole drugs is responsible for drug resistance in *candida* strains. Thymol exhibits immense therapeutic potential including antimicrobial activity. Although its antifungal activity has been reported, not much is known about its mode of action. The present study aims to explore the antifungal activity of thymol and its mode of action at the cell membrane level in *Candida albicans*. Antifungal susceptibility of thymol was done in terms of Minimum Inhibitory Concentration (MIC), Minimum Fungicidal Concentration (MFC), disc diffusion, growth curves and ergosterol quantification assay . This work presents antifungal efficacy and mode of action of thymol on *C. albicans* ATCC 90028. The MIC and MFC values were 32 µg/ml and 64 µg/ml, respectively. Zones of inhibition formed after disc diffusion were 7mm, 11 mm and 17mm at MIC, 2MIC and 3MIC of Thymol. With increasing concentration, the *Candida* growth pattern changes with increased lag phase and reduced log phase. Ergosterol level was significantly reduced. Thymol has a great potential as an antifungal and can be explored in future therapies. It inhibits growth, and significantly reduced ergosterol level which is crucial for survival suggests that its antifungal properties originate from the inhibition of ergosterol level and disruption of membrane integrity.

JH/IASTAM2022/PP128

Preparation and characterization of refreshing beverage coconut (*Kalpavriksha*) water and orange: Nutritional and therapeutic purposes

Sana Khan[1,3], Sultan Zahiruddin[3], Bisma Jan[1,3], Anwar Husain Khan[2,4], Sayeed Ahmed*[1,2]

[1]Department of Food Technology, School of Interdisciplinary & Sciences, Jamia Hamdard, New Delhi-110062, India

[3]Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India

[4]Department of Munafeul Aza (Physiology), School of Unani Medical Education & Research, Jamia Hamdard, New Delhi-110062, India
***Corresponding author:** 9891374647, sahmad_jh@yahoo.co.in

Coconut *(Cocos nucifera)* is known as 'Tree of Life' throughout the world, and its water is said to be *Sheetala* (cold), *Hridya* (cardio-protective), *Deepana* (digestive stimulant), *Laghu* (light) in Ayurveda, and used for therapeutic and nutritional purposes as it relieves *Pitta, Pipasa* (thirst) *and Basti shuddhikara* (diuretic). In this study, an attempt has been made to make a therapeutic and nutritional beverage consisting of coconut water and orange juice. Five different ratios of blended beverage were prepared and finalized coconut water (80%) and orange juice (20%) and were stored in the refrigerator. Proximate analysis, sensory evaluation, phenolic, flavonoid contents and antioxidant activity were determined. Further, TLC was used to identify and quantify the metabolites present in beverage using toluene, ethyl acetate, and formic acid (5:4:1, v/v/v) as a solvent system. The total count of bacteria as well as phenolic and flavonoid content was also determined upto one month for the shelf-life evaluation of blended beverage. The results showed that the blended beverage was stable in all parameters with pH, °Brix, ash content, titratable acidity, total sugars, protein, and fat. The Ascorbic acid, TPC and TFC was found to be 10.6 ± 2.4 mg/100 mL, 72.44 ± 5.30 mg/GAE/gm and, 23.500 ± 3.05 mg/QCE/gm, respectively in blended beverage and showed strong antioxidant activity. The content of gallic acid, hesperidin and, cinnamic acid in blended beverage was found to be 0.46%, 0.23% and, 0.31% respectively. TLC-Bioautography revealed that gallic acid is predominant antioxidant compound in blended beverage. There were no microbial changes during the first month of storage which was under refrigeration conditions. The blended beverage showed one month's shelf life stored under refrigeration conditions without the addition of any preservatives and the physiochemical variations did not affect the sensory characteristics and acceptance.

JH/IASTAM2022/PP129

In Silico prediction influences diverse antimicrobial respecting MK7 biosynthesis inhibition

Sanaa Ismael Abdul-Jabbar, Bibhu Prasad Panda

Department of Pharmacognosy and phytochemistry, Jamia Hamdard, New Delhi
***Corresponding author:** s_durha@yahoo.com

Menaquinone-7, MK-7 is one of the fat-soluble vitamins and one member of the vitamin K family has derived, with the recognition of two primary forms of vitamin K, each with very different participates in a human being's health. The two primary vitamin K forms are vitamin K1 phylloquinone, phytomenadione or phytonadione and are synthesized in green plants and leafy vegetables because it is involved in photosynthesis and another form of vitamin K is menaquinone mediated viscera microbiome. Nevertheless, a synthetic form of vitamin K is called menadione. Detected the antimicrobial consumption for pediatric or adult infections impacts over modified vitamins producing enteric microbiome pathways and effect on gut transcriptome through increased expression of genes involved in tRNA biosynthesis, translation, vitamin biosynthesis. Vitamin MK-7 significantly improved human health and life expectancy for osteoporosis and calcification coronary heart disease, MK-7 deficiency causes serious health complications.

The piolet study for predicted cell wall inhibitors antimicrobial drugs inhibition of biosynthesis menaquinone within cells membrane of the gut microbiome and found the most stable structure at the same protein binding position handled through in silico software. As well as through in silico simulation software predicated on the bioactivity (ADMET) of the product. All antimicrobial thirty-four sets docked by AutoDock Vina software that possess a different binding affinity to the protein that may inhibit a specific enzyme MenA responsible for the conversion to final product menaquinone in the microbiome cell membrane and used GROMAX software for simulation molecular dynamic of protein, ligands, hydrogen bonds and protein–ligand complex. Results showed the thirty-five sets of antibiotics starting with Penicillin-G & Oxacillin ended with Imipenem have a higher affinity to binding with UbiA/MenA enzyme by a lowest free binding energy, as well as compared the drug stability and protein individual residue flexibility of low binding energy to high binding energy through protein-drug interaction.

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Evolving scope and future prospects of herbal pharmacovigilance: A contemporary and emerging approach

Sanchay Sharma[1*], Ajmer Singh Grewal[2], Madhukar Garg[1]

[1]Department of Pharmacy, Chitkara College of Pharmacy, Chitkara University, Rajpura, 140101, Punjab, India

[2]Department of Pharmaceutical Chemistry, Guru Gobind Singh College of Pharmacy, Yamuna Nagar, 135001, Haryana, India
***Corresponding author**: 9041864047, sanchaysharma1999@gmail.com

Pharmacovigilance is the scientific tool and particular discipline which monitors the activities relating to comprehension, drug safety troubles and unfavourable impacts of the new medications being introduced. Likely, along with allopathic industry the pharmacovigilance has extensively being accepted by the herbal industries to develop these practices at certain levels to alleviate the prevalence of unavoidable complications. It has been widely considered that the herbal and traditional medicines are completely safe and does not possess any unintended effects. Therefore, there has been an increasing awareness of the need to develop the pharmacovigilance practices in herbal industries to overwhelm the unwanted after effects and the end results of these medicaments. The presented attempt was collected through scientific reports from the renowned databases, such as Frontiers, Elsevier, and PUBMED etc., to obtain the data about the most recent prospects of pharmacovigilance in the respective field. The current scrutiny highlighted this tool as a substantially significant measure in herbal therapeutics and by applying these methods, the safety of herbal medications have presented the unique challenges which have been perceived, sourced and named successfully to attain the profound patient compliance. Consequently, the purpose is getting resolved by detecting, assessing and preventing the adverse effects or any other complications related to herbal and complementary medicines by expanding the scope in medicine system by patient care, health and risk assessment in every aspect that perhaps, be a very useful update in the coming future.

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Pharmacological basis for the use of medicinal plants for Covid-19 therpay: A critical appraisal

Shamran Ahmad, Sana Rehman, Arunabha Ray

Department of Pharmacology , Hamdard Institute of Medical Science & Research (HIMSR), Jamia Hamdard, New Delhi-110 062

Corona virus disease (Covid-19) is a debilitating acute respiratory tract infection caused by corona virus-2 (SAR COV 2). Various treatment strategies have been used in its treatment which has become a global challenge to the health care system. But none of them are consistently effective so there is an unmet need to develop appropriate treatment strategies for Covid-19. Herbal drugs have served humanity since centuries. India is a hub of traditional medicinal plants of significant therapeutic value. The promising pharmacological properties of these plants have paved the way for developing new therapy against novel Corona virus (CoV) infection. The current review will summarize published works of literature on the effects of traditional Indian medicinal plants against acute respiratory infection (COVID-19, SARS, Influenza, and respiratory syncytial virus infection) and registered clinical trials of traditional Indian herbal medicines in COVID-19. The paper comprehensively evaluates the data of traditional Indian medicinal plants for COVID-19 management. To generate information, databases such as Pub Med, Embase, and Cochrane databases were looked at along with different clinical trial databases.

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Down regulation of FOXN3 mRNA expression and its association with pathological parameters in Indian breast cancer patients

Sheersh Massey

Department of Biosciences, Jamia Millia Islamia, New Delhi, 110025, India
Corresponding author: masseysheersh@gmail.com

In the recent years breast cancer has recorded to be most frequently diagnosed cancer across the globe. Approximately 11.7% of overall cancer cases were of breast cancer and 6,84,996 deaths were reported in the year 2020. Forkhead box N3 transcription factor (FOXN3) that belongs to FOX protein family is critically involved in the cell cycle regulation and tumorigenesis. FOXN3 is identified to be tumor suppressor and its Dysregulation has been reported in various cancers including osteosaroma, hepatocellular carcinomaMultiple and melanoma. However the role of FOXN3 in the progression of breast cancer is still not well understood. In this study we aim to find FOXN3 mRNA expression in case of Indian breast cancer patients and it's correlation with clinical parameters of the patients. The ethical approval was given by Institutional ethical committee of AIIMS,New Delhi and Jamia Millia Islamia, New Delhi. The study comprises of 37 pair of Breast tissue samples including cancer and adjacent normal tissue collected at department of surgical oncology AIIMS, New Delhi and were stored in RNA later at -80˚C for RNA extraction. TRIZOL method was used to extract RNA from breast cancer tissue and adjacent normal tissue. Further, cDNA synthesis was carried out using Verso cDNA synthesis kit. To investigate the FOXN31 mRNA expression, RT- PCR was carried out with LightCycler96 SYBR Green I Master (Roche) using specific primers. Our study showed 21 out of 37 patients to exhibit down-regulation of FOXN3 mRNA in the breast cancer tissue as compared with the normal tisuue. Further on correlation of our data with the clinical parameters, we found its significant association with the estrogen receptor status and tumor grade of the patients. Our results of the FOXN3 mRNA expression study in case of breast cancer indicates the tumorigenic role of FOXN3 in breast cancer. Its significant association with ER positive status and tumor grade indicates its possible role in progression of the disease. Further study on large sample size and also at the protein level through western blotting and IHC will aid in analyzing its role in Breast carcinoma.

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Effect of different types of diet in the management of diabetes mellitus

Shoaib Ahmad

Assistant Professor Department of Moalajat SUMER Jamia Hamdard New Delhi, India
Corresponding author: shamadi18@gmail.com

India is going to be global capital of diabetes and accounts more than 69 million cases at present. In 2030 it is expected to be more than 79 million cases of DM. It is highly alarming situation for India at present and in coming future. Providing cure to these patients will be a new challenge for our medical staff as well as the government. Diet is an important factor in developing DM and also in controlling it along with comprehensive pharmacotherapy. Unani medicine has a strong concept of diet therapy in the management of various diseases that also applies strongly on DM typt-2. A thorough review of old and modern literature of diet therapies, it is clear that some specific as well as simple diets are quite effective in the management of DM.

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Development of monograph, chemoprofiling and network pharmacology studies of *Cucumis utilissimus* (Kakari) seeds

Gaurav[1,2], **Shraddha**[1], Sujat Choudhary[1], Sayeed Ahmad[1,2]*

[1]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi- 110062

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard-110062
***Corresponding author**: Phone: 9891374647, sahmad_jh@yahoo.co.in

Cucumis utilissimus, commonly known as Kakri, belonging to the family Cucurbitaceae, is a creeping herb cultivated in North India, and particularly U.P, and Punjab. Besides its nephroprotective and antioxidant properties, it has anti-inflammatory, free radical scavenging, antidiabetic, and anticancer properties. Preliminary pharmacognostic evaluation of the kakri seeds was done by studying its macroscopic and microscopic characters and monograph was developed as per USP standards. Methanolic extract was prepared using ultrasonication method. The prepared extract was subjected to determination of total phenolic (Folin-ciocalteu method) and flavonoid content (Aluminium chloride method). Further, qualitative and quantitative estimation was carried out by developing a TLC fingerprint profile and quantification of active biomarkers. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective potential at molecular level. Complete monograph of the kakri seeds was developed as per USP. Total phenolic and flavonoid content was found enriched in the prepared extract which was calculated per milligram gallic acid and quercetin respectively. TLC profile was developed and showed several major and minor constituents and quantification of active biomarkers was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of the plant at molecular level and network was established. The conducted study scientifically validates the traditional knowledge of nephroprotective potential of the aforementioned plant/formulation and can be explored further at preclinical and clinical levels.

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Development of monograph, chemoprofiling, and network pharmacology studies of a nephroprotective formulation Jawarish Zarooni Sada

Mohammad Irfan[1], **Siddharth Singh Negi**[1], Humera Naaz[1], Sayeed Ahmad[1,2*]

[1]Bioactive Natural Product Laboratory, SPER, Jamia Hamdard, New Delhi, 110062, India

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi, 110062, India
***Corresponding author:** sahmad_jh@yahoo.co.in

In Unani system of medicine, Jawarish Zarooni Sada has been used in the management of renal ailments. Jawarish Zarooni Sada is a reputed polyherbal preparation containing 15 ingredients, mainly described to be diuretic and nephroprotective. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per the USP standards. Methanolic extract of formulation was prepared and subjected to determination of total phenolic and flavonoid contents. Qualitative estimation was carried out using preliminary phytochemical screening and TLC fingerprinting whereas, quantification of the active biomarkers by HPTLC. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. In silico network-pharmacology was carried out to determine the nephroprotective biomarkers at molecular level. Complete monograph of the nephroprotective formulation was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram of gallic acid and quercetin respectively. TLC profile was developed for the identification and quantification of active metabolites was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. In silico studies reflected nephroprotective effect of metabolites and network was established. The conducted study was performed for standardization of the aforementioned formulation and can be explored further at preclinical and clinical levels.

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Analyzing various targeted roles of Curcumin: aid in Therapeutic Paradigm

Sneha Anand*, Hema Chaudhary

Faculty of Pharmaceutical Sciences, PDM University, Bahadurgarh
Corresponding author: snehaanand203@gmail.com

Curcumin is a polyphenolic compound with excellent anticancer properties for various cancers through its multi-targeted effects like the termination of cell proliferation, inflammation, angiogenesis, and metastasis, thereby acting as antiproliferative and cytotoxic in nature. The present review is the various drug combinations tried with curcumin or its synthetic analogs and the mechanism by which curcumin potentiates the effect of almost every drug. In addition, this article also focuses on aromatherapy which is gaining much popularity in cancer patients. After thoroughly studying several articles on combination therapy of curcumin through authenticated websites, research, & review articles on various search engines like PubMed, ScienceDirect, etc it has been seen that multi-targeted curcumin has the fantastic anticancer potential &, with any drug it is given in combination, has resulted in increasing effect with less dose as well as side effects. It has the potential to overcome the problem of chemoresistance.

JH/IASTAM2022/PP137

Role of nanomaterials in food industry

Sonia Sangwan[1*], Raman Seth[2]

[1]Hamdard Vocatinal Knowledge Ccntre, Moradabad

[2]Principal Scientist, Dairy Chemistry Division, NDRI Karnal, India
***Corresponding author**: soniasangwanera03@gmail.com

Use of Nanomaterials in food industry is growing rapidly. Key factors responsible for the use of nanomaterial are the favorable results in the area of nutrient delivery system, bioactive nanoencapsulation, and detection of biosensors and in quantification of pathogenic organic compounds, in food composition alteration, other chemicals and even edible film to preserve vegetables or fruits. This paper emphasize the applications and the advantages of nanotmaterials in diverse areas of food Industry that cover bioactive nanoencapsulation, packages, edible thin film and nanosensors. We have used nanotechnology in detection of toxic metals in milk (food for children and old population of Bharat).

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Formulation, characterization and evaluation of a novel herbal formulation for mitigating syndrome associated with menopause

Sradhanjali Mohapatra[1], Sayeed Ahmad[2], Kanchan Kohli[1], Zeenat Iqbal[1]*

[1]Nanotechnology Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, 110062

[2]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, 110062
Corresponding author: zeenatiqbal@jamiahamdard.ac.in, 9811733016

Major segments of females develop menopausal and post-menopausal symptoms during or after reaching menopause. Hormone therapy is primarily used as a preferential treatment option for alleviating these symptoms. However, the disinclination of the females towards the use of external hormones owing to associated risks for mitigating syndrome associated with menopause attracts other alternatives such as botanicals for this purpose. Black cohosh (*Cimicifuga racemosa*) is one such plant which is widely used for this purpose. It is a plant/herb which is traditionally exploited and extensively used by women for improvement of problems linked with menopause. The primary objective of the study was to develop an ethosomal gel incorporating triterpene enriched fraction (TEF) (obtained from black cohosh) and to evaluate the effectiveness of loaded ethosomal gel through the transdermal application. TEF-loaded ethosome was prepared by solvent injection method, optimised by a design expert, and characterised for their size, shape, surface charge, entrapment efficiency and stability. The optimized ethosomal suspension was then dispersed into carbopol gel base to form ethosomal gel which was further evaluated by *in-vitro* and *ex-vivo* and *in-vivo* studies. In continuance, skin irritation study of the gel was also carried out. Conclusively, the results suggest that ethosomal gel was found to be effective and successful carrier for TEF through the skin for successful alleviation of menopausal and post-menopausal syndrome.

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Design and development of Mesoporous Bioglass Nanoparticle coating for Bone Regeneration

Sukhmeet Tangri[1], Sandeep Kumar[2], Farhan Jalees Ahmad[1]*

[1]Department of Pharmaceutics, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, 110062

[2]Department of Orthopedics, Hamdard Institute of Medical Sciences and Research, New Delhi, 110062
***Corresponding author:** 9810720387, fjahmad@jamiahamdard.ac.in

Bone regeneration has been remaining a major concern as the implants that are being used get a layer of bacterial infection deposited on them which has to be get removed with a further operation that becomes a non-patient compliance and is also not a permanent solution. To tackle above said problem we have prepared bioglass particles with a combination of antibiotic drugs and finally the developed Bioglass nanoparticles loaded with drugs will be coated on the implants for bone regeneration. Bioglass nanoparticles were prepared using sol gel method and were characterized by SEM, XRD, FT-IR methods. Further, the drugs were incorporated in the particles using adsorption method and were then coated on the implants and finally the implants were used on the bone of animal and the drug release and healing process was noticed for 10 days. The XRD studies illustrated that the particles were made amorphous from crystalline structure on heating it temp. 650° and further the FT-IR results showed the required peaks of the different bends. The drug loading was done by adsorption method and checked by HPLC and finally the drug loaded Bioglass nanoparticles were coated on the implants. These studies suggest that drug loaded Bioglass nanoparticles can be used to coat on the implants for the treatment of bone regeneration where a broad spectrum of antibiotics is covered.

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Metabolite profiling, stability testing, pharmacokinetics and *in vivo* pattern recognition analysis of Arq-e-Keora: A traditional Unani formulation

Sultan Zahiruddin[1,2], Abida Parveen[1], Rabea Parveen[3], and Sayeed Ahmad[1,2*]

[1]Centre of Excellence (CoE) in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi-110062, India

[2]Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India

[3]Department of Pharmaceutics, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India
***Corresponding author:** 9891374647, sahmad_jh@yahoo.co.in

Arq-e-Keora (AeK) is a liquid formulation of the Unani system of medicine and used since long for the management of weakness of heart and palpitation etc. The study was carried out to generate a scientific data for its metabolite profiling, stability testing, pharmacokinetics and pattern recognition analysis of AeK. AeK has been prepared as water distillate of Male Spadix of *Pandanus odoratissimus* L.f. TLC profiling of AeK was performed using hexane and acetone (7:3 v/v) as a solvent system. The metabolic profiling of volatile compounds was carried out using GC-MS. Pharmacokinetic analysis was performed through GC-MS to evaluate how quickly it absorb and distribute in plasma. The pattern recognition analysis was performed in order to recognize the pattern and fate of metabolites in rat plasma up to 24 h after single oral administration of AeK. TLC and GC-MS profiling resulted of 11 and 21 metabolites, respectively. GC-MS analysis revealed that phenethyl alcohol, *α*-terpinolene, *α*, *β*-terpinene, *β*-fenchyl alcohol, hexadecanoic acid and octadecanoic acid are the major metabolites found in AeK. The stability analysis showed that most of the compounds are stable at refrigerator during their consumption. Pharmacokinetics data of phenethyl alcohol showed its absorption was rapid, with T_{max} occurring within 1h after oral administration of AeK. *In vivo* pattern recognition analysis suggests that some metabolite expression was altered after its oral administration. As a result, our model could be used to quality, stability and pharmacokinetic evaluation of various Unani formulations mentioned in Unani Pharmacopoeia of India.

JH/IASTAM2022/PP141

Ferulic acid inhibits pentylenetetrazole induced kindling through the modulation of HMGB1

Surabhi Thapliyal, Shailendra Handu*

Department of Pharmacology, All India Institute of Medical Sciences, Rishikesh, India.
***Corresponding author**: 91-8800847105, shailendra.handu@gmail.com

Available anti-epileptic drugs provide only symptomatic relief rather than targeting disease modification. Ferulic acid through its potent anti-inflammatory, anti-oxidant and neuroprotectant action promoted us to evaluate its therapeutic potential in epilepsy which is usually associated with neuroinflammation. The proposed study aimed to study the possible anti-epileptic effect of ferulic acid in a pentylenetetrazole (PTZ) induced kindled rat model and its underlying mechanisms. Twenty five male rats were allocated into 5 equal groups; i) Normal group: normal rats received vehicle (CMC), ii) PTZ (kindling) + CMC group: received 22 PTZ (30 mg/Kg intraperitoneally (i.p.)) every alternate day and iii) PTZ + NaV group: received Sodium Valproate (200 mg/kg i.p. daily) before PTZ injection. iv) PTZ + FA group: received ferulic acid (40 mg/kg,p.o.) before PTZ injection. v) PTZ + FA' group: received ferulic acid (80 mg/kg,p.o.) before PTZ injection. Seizure severity score, seizure latency were assessed. The expression of HMGB1 by ELISA, and neuronal injury by H&E staining were assessed in rat brain tissues. PTZ caused a significant increase in Racine score and a significant decrease in seizure latency. These effects were associated with a significant increase in HMGB1 and neuronal injury in brain tissues ($p < 0.05$). Meanwhile, Sodium valproate and ferulic acid treatment caused significant attenuation in PTZ-induced seizures, which were associated with significant improvement in HMGB1, and marked decrease in neuronal injury in hippocampal regions ($p < 0.05$). We conclude that FA has neuroprotective effects in PTZ-induced epilepsy, which might be due to attenuation of neuroinflammatory marker, high mobility group box protein 1 (HMGB1).

JH/IASTAM2022/PP142

Occurrence pattern toxicity and bioaccumulation of antibiotics in surface water and wastewater ecosystem

Suriyah Akhter[1,2,3], Sirajuddin Ahmed*[2], Weqar Ahmed Siddiqui[1], Sayeed Ahmad[3]

[1]Department of Applied Science and Humanities Jamia Millia Islamia, New Delhi, 110025, India

[2]Department of Civil Engineering, Jamia Millia Islamia, New Delhi, 110025 India

[3]Bioactive Natural Product Laboratory, SPER, Jamia Hamdard, New Delhi, 110062, India
***Corresponding author:** 9810949329, suahmed@jmi.ac.in

Antibiotics are antibacterial medications used to treat and prevent bacterial infections in humans and animals. Residues of antibiotic have been found in different matrices (surface water, ground water, soil, sediments and other biological samples) with water and sediments being the primary receivers**.** Carbamazepine for example is found in wastewater, surface water and groundwater. Overuse of antibiotics, not only for health purpose but also for animal welfare (food and feed) can have negative effects on the natural environment. The aim of this study was to provide a synopsis of antibiotic concentrations in fresh waters, highlighting the dominant antibiotics in the open water (as opposed to the sediment). The database "Wikipharma" compiles publicly available ecotoxicity data for Active Pharmaceutical Ingredients (APIs), including antibiotics. The rationale for choosing "Wikipharma" as an example for a database was that it is a free, interactive, comprehensive and up-to-date database on the effects caused by pharmaceuticals on non-target animals. Taking the literature into account, we can identify some particularly problematic antibiotics in terms of their occurrence in fresh waters and their toxicity. Some antibiotics like ciprofloxacin and ofloxacin can be found at relatively high concentrations in fresh waters. Antibiotic pollution in fresh water is ubiquitous and the concentrations of many antibiotics are toxic for fresh water organisms from bacteria to multicellular organisms, even sub-lethal concentrations have the ability to induce changes in freshwater communities via bacterial resistance.

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Role of functional foods (GHIZAY-E-DAWAYI), bioactive compounds in bbesity (SAMAN-E-MUFRAT) management and metabolic consequences

Syed Ayman Danish Kirmani*, Faraha Ahmad, Mohammad Aslam

Department of Ilmul advia, School of Unani Medical Education and Research, Jamia Hamdard, New Delhi
Corresponding author: 8899983474, aimankirmani6@gmail.com

Management of weight is essential to keep obesity at bay and maintain good health. Prevention of obesity decreases the risks of other associated disorders of metabolic origin like diabetes, hyperlipidemia, hypertension, cardiovascular risks etc. Functional foods are foods of natural origin that can probably assist in weight management. The proposed study aimed to review about role of functional foods in weight management. Obesity is a metabolic disorder that can further give rise to other co-morbid conditions that may impact badly on health. For example cardiovascular disorders, atherosclerosis, diabetes, inflammatory disorders, hypertension, stroke, cancer etc. Functional foods provide a safer and effective alternative in preventing obesity, managing weight and ward off other associated health problems. Functional foods are foods of natural origin and are rich in their various properties that can improve metabolic incapacities. Functional foods are specific in their bioactive compounds such as caffeine from coffee, allicin from garlic, gallic acid from pomegranate and berries, ascorbic acid from citrus fruits and strawberries, anthocyanins from berries and grapes, catechins from tea and green tea, polyphenols from ginger, capsaicin from capsicum, quercetin from olives, grapes, berries, oleuropein from olives may contribute towards management of weight and prevention of obesity. Functional foods have tremendous potential to decrease the metabolic incapacities related to obesity and can provide a promising alternative in managing weight. However, there is scarcity of the scientific evidence. Also, owing to controversial clinical and epidemiological studies more researches are required to elaborate the mechanisms involved of their possible effect.

JH/IASTAM2022/PP144

Chemotherapeutic efficacy of Myricetin silver nanoparticles (mAgNPs) against colorectal cancer cell line

Syed Tauqeer Anwer[1], Khalid imtiyaz[1], Bushra Khan[1], Irshad Hussain Naqvi[2], M. Moshahid Alam Rizvi[1*]

[1]Genome Biology Lab, Department of Biosciences, Jamia Millia Islamia, New Delhi-25

[2]Dr. M. A. Ansari Health Centre, Jamia Millia Islamia, New Delhi-25.
***Corresponding author**: mrizvi@jmi.ac.in

Colorectal Cancer is the third and second most frequently diagnosed cancer in males and females respectively. Myricetin is a flavonoid, may be used as an anticancer drug against colorectal cancer cells. Chemotherapeutic potential of nutraceutical-based Myricetin silver nanoparticles (mAgNPs) against *HCT116* cell line. Synthesis and characterization of silver nanoparticles labeled with myricetin through SEM, XRD, UV-Visible spectroscopy, FTIR, and Zeta potential. Cytotoxic potential of Myricetin and its nanoparticle was checked through MTT assay against *HCT116* cell line. The size of mAgNP was spherical with a diameter of 30 nm confirmed by SEM. The results indicated that mAgNPs showing the cytotoxic effect in a dose-dependent manner against HCT116 colorectal cancer cells. Myricetin and its silver nanoparticle showed IC_{50} value of 101.6 µg/mL and 31.29 µg/mL respectively. On the basis of above results we conclude that Myricetin silver nanoparticle showed good anticancer potential against colorectal cancer cell line (*HCT 116*).

JH/IASTAM2022/PP145

Characterization, preparation and evaluation of dual drug loaded nanoliposomes of methotrexate with phytobioactive constituent of *Mangifera indica* for transdermal delivery

Syeda Nashvia Adin[1*], Isha Gupta[1], Mohd. Mujeeb[1*], Mohd. Aqil[2], Abul Kalam Najmi[3]

[1]Phytomedicine Laboratory, Department of Pharmacognosy & Phytochemistry, School of Pharmaceutical Education & Research, Jamia Hamdard, New Delhi, India-110062

[2]Department of Pharmaceutics, School of Pharmaceutical Education & Research, Jamia Hamdard, New Delhi, India-110062

[3]Department of Pharmacology, School of Pharmaceutical Education & Research, Jamia Hamdard, New Delhi, India-110062.
***Corresponding author:** mmujeeb@jamiahamdard.ac.in, 919212050090

Combinational drug therapy is becoming more popular for the treatment of cancer and various immunomodulatory disorders by providing synergistic drug effects, reducing drug toxicity, and overcoming multidrug resistance. In recent years, nanocarriers-based delivery of combinational drugs emerged out as an effective approach for delivering the combinational drugs, among which liposomes have been extensively exploited for improved therapeutics efficacy. The present research work designed to prepare and optimize dual-drug loaded nanoliposomes of Methotrexate with Phytobioactive constituent of *Mangifera indica*. The nanoliposomes were prepared by thin film hydration method and optimized using 3-factors at 3- levels Box-Behnken design. The effect of independent variables was taken as Phospholipon 90 G (X_1), sodium cholate (X_2), sonication time (X_3) and their individual as well combined effects were observed on vesicle size (Y_1), entrapment efficiency (Y_2), and *in-vitro* release (Y_3). The optimized formulation was further characterized for drug release, DPPH assay, confocal laser scanning microscopy (CLSM), and ex-vivo permeation study. MTX-MNF-NLop depicted the vesicle size of 152 nm, PDI (0.16), entrapment efficiency of 80.22 ± 0.93% and drug release of 85.41 ± 3.34%. A better antioxidant activity of 89.67% was found as compared to standard ascorbic acid. Ex-vivo permeation studies showed significantly enhanced permeation from MTX-MNF-NLop (75.02 ± 2.05%) than MTX-MNF suspension (34.56 ± 1.73%). Further, the CLSM image of the rat skin suggested rhodamine B loaded MTX-MNF-NLop showed better penetration as compared to control (rhodamine B- solution). From all experimental data, it was concluded that MTX-MNF-NLop is a promising and effective formulation for transdermal delivery.

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Development of monograph, chemoprofiling and network pharmacology studies of a nephroprotective plant: Khatmi (*Althea officinalis*)

Aftab Alam[1,2], **Tushar Rawat**[1], Tasha Riaz[1], Sayeed Ahmad [1,2*]

[1]Bioactive Natural Product Laboratory, SPER, Jamia Hamdard, New Delhi, 110062, India

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi, 110062, India
***Corresponding author**: Phone: 9891374647, sahmad_jh@yahoo.co.in

In Unani system of medicine, *Althea officinalis* (Khatmi) has been scriptured as a potent nephroprotective agent. The major chemical constituents found in *Althea officinalis* are Altheahexacosanyl lactone, Lauric acid, Altheacalamene, ß-Sitosterol, Lanostanol, Althaeacoumaryl glucoside. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per USP standards. Methanolic extract was prepared using ultrasonication method. The prepared extract was subjected to determination of total phenolic (Folin-ciocalteu method) and flavonoid content (Aluminium chloride method). Further, qualitative and quantitative estimation was carried out by developing a TLC fingerprint profile and quantification of active biomarkers. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective potential at molecular level. Complete monograph of the nephroprotective plant *Althea officinalis* was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram gallic acid and quercetin respectively. TLC profile was developed and quantification of active biomarkers was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of the plant at molecular level and network was established. The conducted study scientifically validates the traditional knowledge of nephroprotective potential of the aforementioned plant/formulation and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP147

Development of monograph, chemoprofiling and network pharmacology studies of a nephroprotective plant: Kath (*Acacia catechu*)

Aftab Alam[1,2], **Upasana**[1], Tanzeem Ahmed[1], Sayeed Ahmad [1,2*]

[1]Bioactive Natural Product Laboratory, SPER, Jamia Hamdard, New Delhi, 110062, India

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi, 110062, India
***Corresponding author**: Phone: 9891374647, sahmad_jh@yahoo.co.in

In Unani system of medicine, *Acacia catechu* (Kath) has been scriptured as a potent nephroprotective agent. The major chemical constituents found in *Acacia catechu* are catechin, rutin, isorhamnetin, epicatechin, kaempferol, 4-hydroxybenzoic acid, 3,4′,7-trihydroxyl-3′,5-dimethoxyflavone, quercetin, afzelechin,epiafzelechin, mesquitol, aromadendrin, ophioglonin, and phenol. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per USP standards. Methanolic extract was prepared using ultrasonication method. The prepared extract was subjected to determination of total phenolic (Folin-ciocalteu method) and flavonoid content (Aluminium chloride method). Further, qualitative and quantitative estimation was carried out by developing a TLC fingerprint profile and quantification of active biomarkers. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective potential at molecular level. Complete monograph of the nephroprotective plant *Acacia catechu* was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram gallic acid and quercetin respectively. TLC profile was developed and quantification of active biomarkers was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of the plant at molecular level and network was established. The conducted study scientifically validates the traditional knowledge of nephroprotective potential of the *Acacia catechu* and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP148

Purification and characterization of protein disulphide isomerase and its kinetic trap mutants from *E. coli* host cells

Urfi Siddiqui

Jamia Millia Islamia, New Delhi, 110025, India
Corresponding author: urfisiddiqui.98@gmail.com

Worldwide the highest numbers of deaths are being reported due to cardiovascular diseases. There are number of factors responsible in the progression of the disease among which thrombosis is the most frequently reported disorder. Thrombosis is the condition in which blood clots are formed in the blood vessels and according to WHO reports one in every four people suffer with this disease. The conventional courses of treatment adopted to treat thrombosis have often shown side effects and poor outcomes. Thus to develop better approach for the prognosis and treatment of thrombosis, it is vital to understand the factors responsible for the cause of disease. In the recent studies, Protein disulphide isomerase (PDI) which acts as a chaperone is reported to play critical role in development of clotting disorder. However the interacting partners of PDI and the mechanism involved in the course of development of thrombosis is not well understood. In this study we aim to design kinetic trap mutants for PDI and compare their kinetic activity with the native form. We designed kinetic trap mutants of PDI by mutating the active site through Site directed mutagenesis tool. To isolate the PDI in native as well as mutant form, we cloned the PDI gene into pET23b+ prokaryotic expression vector with 6 his tag, the recombinant PDI was transformed into the E.coli host cell and induced the expression of protein using IPTG. The affinity chromatography was performed to purify the expressed protein using nickel agarose resins. The purified protein (57 kDa) was further confirmed by SDS-PAGE analysis and the concentration and secondary structure was assessed using UV visible spectrophotometer, secondary structure was then confirmed by spectroflourometer. Its bioactivity was analysed by using the insulin turbidometric assays. The bioactive form of native and mutant PDI were effectively expressed and purified using prokaryotic E.coli host. We found that the mutant PDI showed the slower kinetic reaction with insulin than native or wild type PDI. Further these kinetic trap mutants can be helpful in identifying the blood coagulation proteins and their effect on coagulation.

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Effect of Unani pharmacopoeial preparation in Shara (Urticaria): A case report

Uzma Khatoon[1*], Abdur Rauf[1], Zameer Ahmad[2]

[1]Department of Ilmul Advia, Ajmal Khan Tibbiya College, Aligarh Muslim University, Aligarh, 202002

[2]Department of Amraz-e-Jild wa Tazeeniyat, Ajmal Khan Tibbiya College, Aligarh Muslim University, Aligarh, 202002
Corresponding author: dr.uzmakhatoon@gmail.com, 8279720808

Urticaria is a vascular reaction of the skin characterized by the appearance of wheals, generally surrounded by a red hals or flare and associated with severe itching, stinging or pricking sensation. These wheals are caused by localized oedema. Urticaria is known as *Shara* in Unani Medicine. According to the philosophy of Unani medicine, the cause of Shara (Urticaria) is believed to be the *Fasad-e-Dam* (blood impairment) caused by the vapours of safrawi khoon (bilious blood) or *Balgham-e-Boraqi* (acidic phlegm) coming towards the skin or periphery of the body. In the present paper a case report of a registered patient, 25 years old female, having the complaints of pricking sensation and intense itching for 3 years was undertaken. According to the history given by the patient, the skin turns red on itching followed by elevated lesions (wheal) without having any predilection for any specific site. It gets aggravated in excessive hot temperature. Sometimes it subsides by itself whereas sometime patient had to take antihistaminic tablets. Earlier she had taken homeopathic and allopathic treatments but was not relieved. Patient was in distress and her quality of life was significantly compromised. She was diagnosed with *Shara-e-Muzmin*. Some baseline investigations were done i.e. complete blood count, LFT, RFT, along with AEC and IgE. Patient was given unani treatment comprising the infusion of *Shahtra* (*Fumaria officinalis), Unnab (Zizyphus sativa), Aloo Bukhara (Prunus domestica), Kishneez khushk (Coriandrum sativum)* along with *Sikanjabeen Sada* which was self-prepared from *Shahed Khalis (pure honey)* in various dosage as per requirement of the patient. Patient felt quite relieved with no eruptions and itching within 3 weeks. No significant adverse effects were reported during treatment. Full details of the case report will be presented in the paper.

JH/IASTAM2022/PP150

Role of Medicinal plants in management of Post-COVID-19 induced Alzheimer's disease

Vaishali Sethi*, Divya Sharma, Mahaveer Dhobi

Department of Pharmacognosy and phytochemistry, Delhi Pharmaceutical Sciences and Research University, Delhi
***Corresponding author:** 8527884269, vaishali.fbd@gmail.com

The coronavirus-associated acute respiratory illness outbreak known as coronavirus disease 19 (COVID-19) is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It is characterized by symptoms such as fever, cough, headache, breathing problems, and loss of taste and smell which poses a long-lasting challenge that not only affects the cardio-respiratory system but also has a serious impact on the central nervous system. Post-COVID-19 complications last longer than four weeks after the initial onset of infection that primarily affect the cardiovascular, pulmonary, dermatological, hepatic, and neurological systems. Patients with COVID-19 present a wide range of neuropsychiatric symptoms, which result from systemic inflammation, infection of neural cells by SARS-CoV-2, effects of cytokines of the central nervous system, glial dysfunction, neuroinflammation, or abnormal epigenetic changes of stress-related genes. Post-COVID-19 induced Alzheimer's disease associated with higher morbidity is the most prevalent type of dementia. Many synthetic medications such as ladostigil, galantamine, memantine, donepezil, glutathione, rivastigmine, and ubiquinone are used to improve Alzheimer's disease symptoms and stop their progression, but the results are often unsatisfactory and accompanied by side effects. Medicinal plants have emerged as a substitute for synthetic medications and can be used to treat post-COVID-19 complications because of its low toxicity. Commonly reported herbs administered to Alzheimer's disease patients are *Ginkgo biloba, Commiphora whighitti, Centella asiatica, Bacopa monniera, Curcuma longa, and Withania somnifera***.** Indian herbal formulations developed for Alzheimer's disease include BR-16A (Mentat), Brahmi Ghrita and Abana. Medicinal plants may show promise in the early treatment of Alzheimer's disease and disorders including memory loss and dementia since they have fewer side effects than synthetic medications and are beneficial to treat COVID-19 and post-COVID-19 complications.

JH/IASTAM2022/PP151

Validation of nutraceutical properties of feed additive using *Moringa oleifera* and *Chenopodium album* against mycobacterial infections in domestic livestock

Vaishnavi Garg*, Shoor Vir Singh, Saurabh Gupta

Department of Biotechnology, GLA University, Mathura
***Corresponding author**: gargvishi96@gmail.com

Mycobacterium avium subspecies *paratuberculosis* (MAP) causes Johne's disease in ruminants and does not get killed during the standardized pasteurization condition, therefore enter into the human food chain via milk (zoonotic concern). Moreover, in the absence of specific anti-MAP drug therapy and use of anti-TB drugs for long time in animals as well as in human leads to the resistance and is also not cost effective. Therefore, this study aims towards the development and validation of novel feed additive for small ruminants (goat etc) using nutraceutical properties of medicinal plants namely *Moringa Oliefera and Chenopodium album L.* in order to reduce the bio-load of MAP bacilli in milk through immune-stimulation, thereby, improving the physical health profile and productivity of domestic livestock in terms of milk and meat.

JH/IASTAM2022/PP152

Cloning and expression including process optimization of Virus Like particle in *Pichia pastoris* host system

Vaishnavi Garg[1,2]

[1] Department of Biotechnology, GLA University, Mathura

[2]Centre of Excellence for Biopharmaceutical Technology, Department of Chemical Engineering, IIT Delhi
***Corresponding author**: gargvishi96@gmail.com

Cervical cancer represents a major global challenge for public health as it is the most relevant consequence of human papillomavirus (HPV) infection. It is considered to be the most common cancer among women worldwide. Recombinant virus-like particles (VLPs) of HPV have been produced and shown to be a promising vaccine candidate in preclinical studies. However, the high production cost of HPV and VLP leads to the higher cost of vaccines so that the women in developing countries are not able to take this costly vaccine. Hence, in this study, we have used *Pichia pastoris* as a host system, developed its clones to produce HPV 16 L1 VLPs, and tried to enhance the productivity by checking the effect of various physical parameters as well as media components. The one-factor-at-a-time (OFAT) approach was used to study the effect of different variables like medium pH, temperature, harvest time.

JH/IASTAM2022/PP153

Enhancement of bioactive compounds for nutrition and health in mustard through PGPR application

Varisha Khan, Noushina Iqbal, Shahid Umar*

Department of Botany, School of Chemical and Life Sciences, Jamia Hamdard, New Delhi 110062, India
***Corresponding author**: sumer@jamiahamdard.ac.in

Mustard (*Brassica juncea*), also commonly known as Chinese mustard, brown mustard, leaf mustard, vegetable mustard, or Oriental mustard, belongs to the cruciferous family and is oil-yielding crop. Farmers eagerly cultivate mustard because of its adaptability to a variety of agroclimatic situations and good production. Seeds and leaves both are edible and are also used as spice and vegetables. Mustard is a cheap and nutritious food that contains various phytochemicals compounds like vitamins, minerals, chlorophylls, glucosinolates (and their degradation products), polyphenols and volatile components (allyl isothiocyanate, 3-butyl isothiocyanate, etc.), saponins, flavonoids, alkaloids, carbohydrates, proteins etc. Additionally, mustard have wide range of pharmacological activities, including anti-oxidant, anti-inflammatory, bacteriostatic, antiviral, antdiabetic, anticonvulsant, anti-obesity, antihyperglycemic and antidepressant etc. Owning to the medicinal and economical benefit of mustard, we have explored the effects of soil-inoculated PGPRs on physiological attributes, antioxidant system and glucosinolate content besides its implications for growth and productivity of mustard plant. We have given treatment of three bacterial strains *Pseudomonas fluorescens*, *Bacillus megaterium, Azotobacter chroococcum* individually as well as in combination and examined their impacts on mustard's phytochemicals, growth and yield. It was observed that inoculated plants had more phytochemical content and automatically more pharmacological activities as compared to non-inoculated plants.

JH/IASTAM2022/PP154

Antimycobacterial potential of traditional Unani herbs *Reihan* and *Katai* against *Mycobacterium avium* subspecies *paratuberculosis* (MAP): Combating auto-immune disorders

Varsha Srivastava[1,2], Manthena Navabharath[3], Saurabh Gupta[3], Shoor Vir Singh[3], Sayeed Ahmad[1,2*]

[1]Bioactive Natural Product Laboratory, Jamia Hamdard, New Delhi, Delhi, India

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, India

[3]Department of Biotechnology, GLA University, Mathura, Uttar Pradesh, India
***Corresponding author**: 9891374647; sahmad_jh@yahoo.co.in

Paratuberculosis, is a chronic enteric inflammatory condition. The infection occurs dominantly in domestic and ruminant population. Global and Indian studies have unveiled high bio-load of live MAP in raw and liquid milk as well as milk products. The association of these bacilli has been also correlated with a number of disorders of autoimmune nature. Hence, there exists a need to develop an alternative therapy for such infection. The Unani system of medicine, introduced by Greeks, has been used for the prophylaxis and treatment of various diseases and disorders. The holy herbs *Ocimum sanctum* Linn. and *Solanum surattense* Burm. F. are mentioned as anti-inflammatory (*Mohallil-e-auram*) in Unani system of medicine, hence, they have been investigated against MAP. The proposed study aimed to evaluate the anti-mycobacterial activity of *Ocimum sanctum* Linn and exploration of its anti-MAP potential. The extracts of the selected plants were prepared and characterized. *In vitro* REMA assay was conducted to determine anti-MAP activity. *In vitro* immunomodulatory as well as anti-inflammatory potential were also assessed using Pinocytic assay and Membrane stabilization assay respectively. The extracts showed potent anti-mycobacterial activity against MAP. Immunomodulatory and anti-inflammatory potential of the said extracts was revealed. The best active extracts of the plants was determined showing the maximum inhibition giving a ray of hope for development of alternative therapies against MAP. Herbals hold a significant ethnobotanical relevance against various diseases and disorders. The potential of herbs remains unexplored against MAP. Hence, the conducted research will be beneficial for the management of the aforementioned bacilli and related infections.

JH/IASTAM2022/PP155

Multi-targeted therapeutic approach of polyphenols in alleviation of oxidative and inflammatory stress induced renal dysfunction: An *in-silico* approach

Vijay Kumar[1], Yasheshwar[2], Niharika[1], Sayeed Ahmed[1]*

[1]Bioactive Natural Products Laboratory, Jamia Hamdard, New Delhi-110062, India

[2]Department of Botany, Acharya Narendra Dev College (University of Delhi), Govindpuri, Kalkaji, New Delhi-110019, India
***Corresponding author**: 9891374647, sahmad_jh@yahoo.co.in

Kidney disease has been acknowledged as the most crucial health problem worldwide which contribute to severe morbidity and mortality. The phytoconstituents specially polyphenols have been acknowledge as potential therapeutic agent in elevation of several acute and chronic disease. The current study is aimed to investigate multi-targeted therapeutic role of polyphenols against oxidative and inflammatory stress induced renal dysfunction. Network pharmacology and gene ontology analysis was performed to investigate the multi-mechanistic and therapeutic action of polyphenols involved in pathophysiology of renal disease. Furthermore, Swiss ADME analysis was performed to investigate the pharmacokinetic behavior of screened polyphenols with respect to drug distribution and permeability. Results of network pharmacology and gene ontology analysis showed multi targeted therapeutic effect of polyphenols in amelioration of the oxidative and inflammation stress induced kidney dysfunction via amelioration the pathophysiological changes through several pathways such as polycystic kidney disease, positive and negative regulation of cell growth, excretion of toxins, reduction of oxidative and inflammatory stress etc. In SwissADME analysis, the selected polyphenols exhibits significant permeability and lipophilicity index. The skin permeability index of each selected metabolites as polyphenols was found as log Kp value of Gallic Acid (-6.84), Caffeic Acid (-6.58), Kaempferol (-6.7), Quercetin (-7.05), Myricetin (-7.4), Rutin (-10.26), Catechol (-6.35). Therefore, it can be concluded that several polyphenolic compound exhibits multi-mechanistic action in pathophysiology involved in kidney dysfunction via regulating several genomes involved in polycystic kidney disease, positive and negative regulation of cell growth, excretion of toxins, reduction of oxidative and inflammatory stress etc.

JH/IASTAM2022/PP156

Pharmacovigilance for drug safety

Vishal Kumar[1], Lalit Parihar[2]

R. V. Northland Instituted, Dadri, Greater Noida, U. P.
Corresponding author: vishalkumarsit@gmail.com

Pharmacovigilance is a component of drug safety and is defined by the World Health Organization as the science and actions relating to the detection, assessment, understanding and prevention of adverse effects or any other drug-related problems. Information received from patients and healthcare providers via pharmacovigilance agreements, as well as other sources such as the medical literature, patient complaints, physician advice or any market complaint related to any adverse reaction of any drug plays a critical role in providing the data necessary for pharmacovigilance to take place. In fact, in order to market or to test a pharmaceutical product in most countries, adverse event data received by the license holder (usually a pharmaceutical company) must be submitted to the local drug regulatory authority. Therefore, it is important to monitor safety during the post approval period and throughout the entire lifecycle of the medicinal product to arrive at the genuine risk-benefit profile of the medical product and take needed measures to minimize risks. In addition to analyzing human being case safety reports and aggregate reports, risk management is undertaken by data mining pharmacovigilance safety databases, signal detection, and by implement risk management programs.

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Comparative study of Itrifal Kishneezi and its sugar free granules for antidepressant potential

Wajeehul Qamar[1*], Suhail Ahmad[1], Aisha Siddiqui[2], MA Jafri[2], Mohd Mikaeel[3]

[1]Department of Ilmul Advia, Sufia Unani Medical College Hospital & Research Centre, East Champaran, Bihar

[2]Department of Ilmul Advia, SUMER, Jamia Hamdard, New Delhi

[3]Department of Moalajat, Sufia Unani Medical College Hospital & Research Centre, East Champaran, Bihar
*__Corresponding author__: drwajeeh_unani@yahoo.com, 8294057006

Itrifal Kishneezi (IK) is a sugar or honey based antidepressant Unani confectionary but it can not be prescribed for the patients suffering from depression with diabetes. The prevalence of major depression in people with diabetes is 11% and the prevalence of clinically relevant depression is 31%. Moreover; depression increases likelihood of developing stroke, diabetes etc. To compare the antidepressant activity of IK and its sugar free granules (GIK) through Despair Swim Test (DST) and model of Reserpine-induced depression using adult male Swiss albino mice. Acute and chronic both studies were carried out in DST model while in Reserpine induced depression model only chronic study was done. In behavioral model of DST, pre-treatment of IK and GIK enhanced the duration of swimming and climbing while reduced the duration of immobility. In pharmacological model, pre-treatment of both the test drugs showed significant reduction in hypothermia and ptosis which are the signs of depression. In both the models, it was found that IK ($p<0.001$), and GIK ($p<0.001$) significantly decreased the symptoms of depression when compared with the control and chronic administration of the test drugs gave better result than that of the acute administration. The intra-comparison between IK and GIK showed no statistical significant variation in the activity. This study confirms that there is no significant difference in the antidepressant effect of IK and GIK but chronic administration of both the test drugs is more effective than acute administration.

JH/IASTAM2022/PP158

Extraction of bioactive constituents from Darchini (*Cinnamomum verum*) and there *in vitro* and *in-silico* molecular docking, and ADMET analysis against Structural proteins of Dengue virus

Yalnaz Malik[1], Mohammad Altamish[2], Anuja Krishnan[1*]

[1]Department of Molecular Medicine, School of Interdisciplinary Sciences & Technology,Jamia Hamdard, New Delhi-110062 India

[2]Department of Pharmacology School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, 110062, India
***Corresponding author**: anuja.krishnan@jamiahamdard.ac.in

Dengue, a mosquito-borne viral disease transmitted by female *Aedes aegypti* mosquitoes which has rapidly spread to all regions. About 400 million people are affected yearly. It is an enveloped, positive sense, single stranded RNA virus of the family Flaviviridae. Having four serotypes (DENV1,2,3,4) each causing infection. *Cinnamomum*, a genus of the family Lauraceae, in traditional medicine Cinnamon and its phytoconstituents have effective antiviral activity against viruses like HSV, influenza A, SARS-COV etc. In this study we will evaluate the anti-dengue potential of Darchini. The plant material was extracted and calculated its yield value and quantification by HPTLC and cell viability through MTT cytotoxicity assay.The crystal structures of the E (PDB-4UTC), sand M/PrM (PDB-3C5X) proteins were taken from the protein data bank (PDB) and docked with phytoconstituents of *Cinnamomum* to explore their inhibitory potential using Vina tool and AutoDock. The percentage yield value of aqueous extract was found 21.26 ±0.28% and quality control analysis by HPTLC fingerprinting showed separation of different toluene: ethyl acetate: formic acid (5:4:1, v/v/v) showed separation of fourteen components and and Euginol (R_f 0.05),Cinnamaldehyde (R_f 0.09) and Ellagic (R_f 0.12) were identified at 254 nm.IC_{50} value of aqueous extract of Darchini, was 701.5.2µg/mL. Docking study revealed, Euginol, Cinnamaldehyde, and Ellagic acid, shows ΔG against E protein with -5.0, -6.9, and -8.5 Kcal/mol, respectively, while their pKi were found to be 1240, 702.51, and 572.52 µM, respectively. *In silico* ADMET analysis revealed that these 3 compounds could be potential drug candidates. Thus, these phytoconstituents of *C.verum* can be potential druggable natural compounds, which can block entry of virus to host cell by inhibition of E protein.

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Development of monograph, chemoprofiling and network pharmacological studies of a nephroprotective plant: *Tukhm-e-Hulba* (*Trigonella foenum-graecum* L.)

Varsha Srivastava[1,2], **Yash Aggarwal[1]**, Naveen Parmar[1], Nischay Sharma[1], Sayeed Ahmad[1,2]*

[1]Bioactive Natural Product Laboratory, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi- 110062

[2]Centre of Excellence in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard-110062
***Corresponding author**: Phone: 9891374647, sahmad_jh@yahoo.co.in

In Unani system of medicine, fenugreek has been scriptured as a potent nephroprotective agent. The major chemical constituents found in fenugreek seed are galactomannan, diosgenin, trigonelline, tannic acid, gitogenin, and Vitamin A and 4-hydroxyisoleucine. Preliminary pharmacognostic evaluation of the selected plant was done by studying its macroscopic and microscopic characters and monograph was developed as per the USP standards. Methanolic extract of powdered drug was prepared and subjected to determination of total phenolic and flavonoid contents. Qualitative estimation was carried out using preliminary phytochemical screening and TLC fingerprinting whereas, quantification of the active biomarkers by HPTLC. High-throughput bioautographic determination was carried out for identification of antioxidant compounds using DPPH. *In silico* network-pharmacology was carried out to determine the nephroprotective biomarkers at molecular level. Complete monograph of the nephroprotective plant *Trigonella foenum graecum* L. seeds was developed as per USP. Total phenolic and flavonoid content of the prepared extract was determined and was calculated per milligram of gallic acid and quercetin respectively. TLC profile was developed for identification and quantification of active metabolites was done. High-throughput bioautographic determination revealed antioxidant compounds of the extract. *In silico* studies reflected nephroprotective effect of metabolites and network was established. The conducted study was performed for standardization of the aforementioned plant and can be explored further at preclinical and clinical levels.

JH/IASTAM2022/PP160

Fortification of Jamun juice with emulsified vitamin D_3; characterization of its nutritional and physicochemical properties

Yasmeena Jan[1], Muneeb Malik[1], Afrozul Haq[1], Sayeed Ahmad[2], Bibhu Prasad Panda[3*]

[1]Department of Food Technology, School of Interdisciplinary Science and Technology, Jamia Hamdard, New Delhi, India

[2]Bioactive Natural Product laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi

[3]Microbial and Pharmaceutical Biotechnology Laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India
***Corresponding author:** bppanda@jamiahamdard.ac.in, 9990335013

Fortification of beverages with fat-soluble vitamins has been a challenging task for the food sector. To meet the forthcoming demands of growing population it becomes necessary to enhance the functional value of underutilized fruits. The purpose of this study was to fortify jamun juice with vitamin D_3 with the aim to boost health and tackle vitamin D deficiency. Jamun juice was evaluated for proximate analysis and standardization was carried out before fortification. A low temperature aided sonication method was used for the fabrication of vitamin D_3 nanoemulsion which was incorporated in the Jamun juice. The formulated vitamin D fortified Jamun juice (VDFJJ) was evaluated for various physicochemical characteristics. The nanoemulsion used for fortification had a particle size of 165 nm and zeta potential of -36 mV. The VDFJJ was found to have total polyphenol content of 15.37 ± 2.13 mg GAE/mL, total flavonoids of 9.27 ± 1.63 mg QE/mL, and antioxidant activity of 95.2 %. Invitro alpha-amylase and alpha-glucosidase activity were found to be 68.4 ± 0.98 % and 59 ± 1.95 % respectively. Vitamin D_3 exhibited a release profile of 85 % in simulated gastrointestinal fluids. Vitamin D_3 was found to be stable in jamun matrix, with a slight decrease (4000 IU-2840 IU) during three-month storage. To the best of our knowledge, no fruit beverage has been fortified with vitamin D and a successful formulation of vitamin D fortified Jamun juice will bring new horizons in the fortification of other low-/non-fat foods (beverages).

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Andrographolide from Kiryat (*Andrographis paniculata*) as an adjuvant enhances the anti-tumor activity in Balb/c mice

Zoya Malik[1,3], Rabea Parveen[2], Syed Akhtar Husain[1*], Sayeed Ahmad[3*]

[1]Department of Biosciences, Jamia Millia Islamia, New Delhi 110025

[2]Department of Pharmaceutics, SPER, Jamia Hamdard, New Delhi-110062

[3]Bioactive Natural Product Laboratory, Department of Pharmacognosy & Phytochemistry, SPER, Jamia Hamdard, New Delhi, 110062

***Corresponding authors:** sahmad_jh@yahoo.co.in, shusain@jmi.ac.in

Kiryaat (*Andrographis paniculata*, family, Acanthaceae) – is a plant used in Unani medicine, well-known as the 'king of bitters' due to its intensely bitter taste. Numerous studies have reported the anti-tumor activity of this plant and its main phytocompound andrographolide (AG) in different cancer types. Kiryat has been selected to synthesize lipid nanoparticles of andrographolide and develop it as adjuvant therapy with marketed cancer drug formulation responsible for its anti-cancer activity. The proposed study aimed to formulate solid lipid nanoparticles of andrographolide and develop it as an adjuvant for the treatment of peritoneal tumor in Balb/c mice. Solid lipid nanoparticles were prepared using solvent injection method. Developed SLN were characterized for hydrodynamic diameter, zeta potential, polydispersity index, TEM, DSC, and FTIR. Then, in vitro studies on cancer cells was performed following animal studies using EAC cells induced tumor in Balb/c mice. The nanoparticles were successfully synthesized and characterized. The in vitro studies showed enhanced anti-cancer activity of marketed drug when AG was used as adjuvant. Also, in Balb/c mice mean survival time of mice increased in group treated with FU and AG (as adjuvant). The results also showed comparatively no significant toxicity to blood. The findings of this study revealed that this novel technique could be utilized to treat tumors using AG as an adjuvant and useful in minimizing the toxicity created by marketed drugs.

JH/IASTAM2022/PP162

Controlled release thiolated chitosan nanoparticles of risedronate: Formulation characterization and in-silico study

Zoya Saifi[1], Saima Amin[1], Divya Vohra[2]

[1]Department of Pharmaceutics, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India

[2]Department of Pharmacology, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India

Risedronate sodium is a third generation Bisphosphonate possessing higher antiresorptive activity acts by inhibiting osteoplastic activity of the bone cells which help in bone restoration and thus used for the treatment of osteoporosis. But the oral bioavailability is very low (1%) and the half-life of the drug is 1.5 hour therefore there is a need to have controlled delivery. Controlled release formulation design and *in silico* study of risedronate. Thiolated chitosan was synthesized and characterized through spectral analysis. Conjugated controlled release system was developed using hydroxyapatite following chemical reactions. Further, *In-silico* molecular docking studies were performed comparing the binding affinity of risedronate-hydroxyapatite-thiolated chitosan and risedronate with farnesyl pyrophosphate synthetase enzyme. Autodock vina was used for molecular docking studies and visualization was done in pymol and discovery studio. Thiolated chitosan (TCS) was synthesized and showed yield of 79.2%. DSC of risedronate showed an exothermic peak of melting at 265^{o}C and two endothermic peaks at 205^{o}C and 245^{o}C with corresponds to solvent loss. Solubility studies showed maximum solubility i.e., 28.73 mg/mL in distilled water as compared to other buffers. *In-silico* molecular docking studies had shown that risedronate-hydroxyapatite thiolated chitosan possess four times more binding affinity to farnesyl pyrophosphate synthetase than risedronate. Risedronate loaded thiolated chitosan and hydroxyapatite were developed by ionotropic gelation method and optimized by Box-Behnken statistical design. The mean particle size, polydispersity index and entrapment efficiency of optimized formulation were observed 228.1 nm ±4.45, 0.231±0.0102 and 83.2 ± 2.61 respectively. Transmission electron microscopy (TEM) of optimized formulation showed spherical particle size. The study revealed that thiolated chitosan offers controlled release of risedronate along with desired pharmaceutical characteristics such as small size, good homogeneity and stability. Further, the binding affinity of risedronate with farnesyl pyrophosphate synthetase enzyme was also not altered when formulated as a conjugated controlled release system.

JH/IASTAM2022/PP163

Metabolomics and TLC-MS Bioautographic identification of antioxidant and antidiabetic metabolites from *Murraya koenigii* and *Syzygium cumini* of AYUSH system

Zoya Siddiquee[1,3], Sultan Zahiruddin[1,3], Rabea Parveen[2], Sayeed Ahmad[1,3*]

[1]Bioactive Natural Product Laboratory, Department of Pharmacognosy and Phytochemistry, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi, India

[2]Department of Pharmaceutics, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India

[3]Centre of Excellence (CoE) in Unani Medicine (Pharmacognosy and Pharmacology), Jamia Hamdard, New Delhi-110062, India

***Corresponding author:** sahmad_jh@yahoo.co.in, 9891374647

Medicinal herbs prescribed by AYUSH system are a cornerstone of our holistic medical field, and are used to painstakingly addresses different stages of health and diseases. Bioautography is a technique for biological activity detection, combining elements of planar chromatography, used in activity-based screening and determination of bioactive phytochemicals. Selection of well-established antidiabetic plants, preparation of their bioactive extracts and development of HPTLC fingerprints, TLC-Bioautographic identification of antioxidant and antidiabetic compounds, Isolation and MS characterization of bioactive compounds. Aqueous and methanolic extracts of two medicinal plants(*Murraya koenigii and Syzygium cumini*) were prepared by the process of maceration, and subjected to qualitative HPTLC analysis, followed by performing Bioautography, employing DPPH, α-amylase and α-glucosidase inhibition assay. The isolated bioactive constituents were scraped off from the HPTLC plates, kept in Eppendorf tubes, dissolved in LCMS grade methanol, filtered by 0.22 um syringe filter and were finally identified and characterized by Metabolomics studies (Mass spectrometry). TLC-MS Bioautography effectively facilitated identification of bioactive constituents, and the study revealed that selected plants possess potent antidiabetic and antioxidant activity. Various bioactive compounds were identified by MS, like Arjunolic acid, Myristic acid, Malvidin-3-glucoside, Quercetin-3-O-acetyl rhamnoside, Koenoline, Murrafoline-D, Mukeic acid, (3R)-3-O-β-D-Glucoside-6′-D-apiose-β-ionone, Cinnamic acid, Murrayakonine B, Murrayamine J, Murrayacinine, Mukoeic acid, Kaempferol-7-O-(6”-rhamnosyl) hexoside, Mukoline, Xanthyletin, Chlorogenic acid etc. The research provided empirical evidence to support the purported therapeutic benefits of the chosen medicinal plants, consolidating their role in treatment of Diabetes and as antioxidant compounds (free radical scavengers).

JH/IASTAM2022/PP164

Anatomical study of stem & leaf of *Tinospora cordifolia* growing in different Areas of Hazaribag (Jharkhand)

Zeba Ali Shervani*, P. K. Mishra**

[1]Department of Botany, Vinoba Bhave University, Hazaribag Jharkhand, India
***Corresponding authors:** pkm.vbu@gmail.com, shervanizeba158@gmail.com

Tinospora cordifolia (Willd.) Miers ex Hook F. & Thoms. Belonging to the family Menispermaceae family is a large tropical climbing shrub commonly found throught India. It is commonly known as the heart leaved moonseed plant in English, Guduchi in Sanskrit and Giloy in Hindi. The plant has an importance in traditional ayurvedic medicines used for ages in the treatment of fever, Jaundice, chronic diarrhea, cancer, dysentery, bone fracture, Pain, Asthama, Skin diseases, eye disorder etc. In this study the Anatomical study of stem & leaf of *Tinospoa cordifolia* growing in different areas of Hazaribag (Jharkhand) are done. The samples were collected from four different areas of Hazaribag i.e Pugmil, Hirabag chowk, Dept. of Botany, Botanical Garden of VBU. The samples of almost equal diameter were taken. Anatomical studies were done by cutting section, staining them with safranine and preparing slides. Thickness of different layers of tissues were recorded to see wether there is any variation of ecological conditions. Micrometer was used to measure the thickness of different slides. The anatomical studies are vital in the present- day secenario not only helpful in the proper identification of the genuine materials in use but also to distinguish different species of *Tinospora cordifolia*, where the stem and leaf are often admixed with other species of Tinospora in the crude drug market.

JH/IASTAM2022/PP165

Withania somnifera is new hope in cancer treatment

Nour Salibie, Sanaa Ismael, Bibhu Prasad Panda*

Microbial and Pharmaceutical Biology Lab, Department of Pharmacognosy and Phytochemistry, Jamia Hamdard, New Delhi
***Corresponding author:** bppanda@jamiahamdard.ac.in, 9990335013

Withania somnifera is one of the most important plants used in herbal remedies for hundreds of years and is still used now. It is considered a big pharmaceutical reservoir, because of its various medicinal activities. It has a very important anti-cancer activity according to some of its chemical constituents called withanolides. Cancer immunotherapy has shown promising results over the past few years. Programmed Cell Death Ligand 1 (PD-L1) is a transmembrane protein that is considered to be a co-inhibitory factor of the immune response, it plays an important role in various malignancies where it can attenuate the host immune response to tumor cells. To study the inhibition activity of predicted withanolides against PDL1 protein which works like a "stop sign" to inactivate T cells and found the most stable structure at the same protein binding position handled through in silico software. Meanwhile, through in silico simulation software predicated on the bioactivity (ADMET) of the product. The four withanolides were docked by Pyrx software. They showed different binding affinity to PDL1 protein which works by attaching to receptors on T cells called PD-1 and B7.1. Furthermore, GROMAX software was used for simulation of the molecular dynamic of protein, ligands, hydrogen bonds, and protein-ligand complex. Among the studied compounds, Withanone with a binding affinity - 9.6 kcal/ mol, has the highest potential of binding to PDL1 with the lowest free binding energy, and it showed high stability with protein individual residue flexibility of low binding energy as well, through protein-drug interaction. Thus, it could be predicted as a plausible inhibitor to disrupt cancer cells from inactivating T cells through both PD-1 and B7.1.

JH/IASTAM2022/PP166

Formulation and evaluation of chronomodulated pulsatile drug delivery system for nocturnal hyperacidity

Shelke Karishma*, Pande Muskan, Mahajan Nilesh, Mahajan Ujwala, Kharwade Rohini

Department of Pharmaceutics, Dadasaheb Balpande College of Pharmacy, Besa, Nagpur- 440 037, Maharashtra, India
***Corresponding author:** shelkekarishma2310@gmail.com

The objective of this work was to develop and evaluate oral pulsatile tablet of Pantoprazole sodium for the treatment of nocturnal hyperacidity. Pulsatile drug delivery system for Pantoprazole sodium was formulated initially as a core tablet followed by press coated. Five different compositions of the core tablet were prepared by using cross carmellose super disintegrant. Based on drug content and dissolution time F5 formulation optimised and proceeds for press coating. Five different compositions of press coating were prepared and evaluated for in vitro drug release. The formulation C4 achieved a maximum of 99.65% cumulative drug release over a period of 3hr. 30 min. Lag time for C4 formulation was found to be 2 hr. It means that the system was found to be satisfactory in terms of drug release after a lag time. Since the developed formulation when taken at bedtime, the tablet would be expected to release the drug at midnight which provides better control with the nocturnal hyperacidity.

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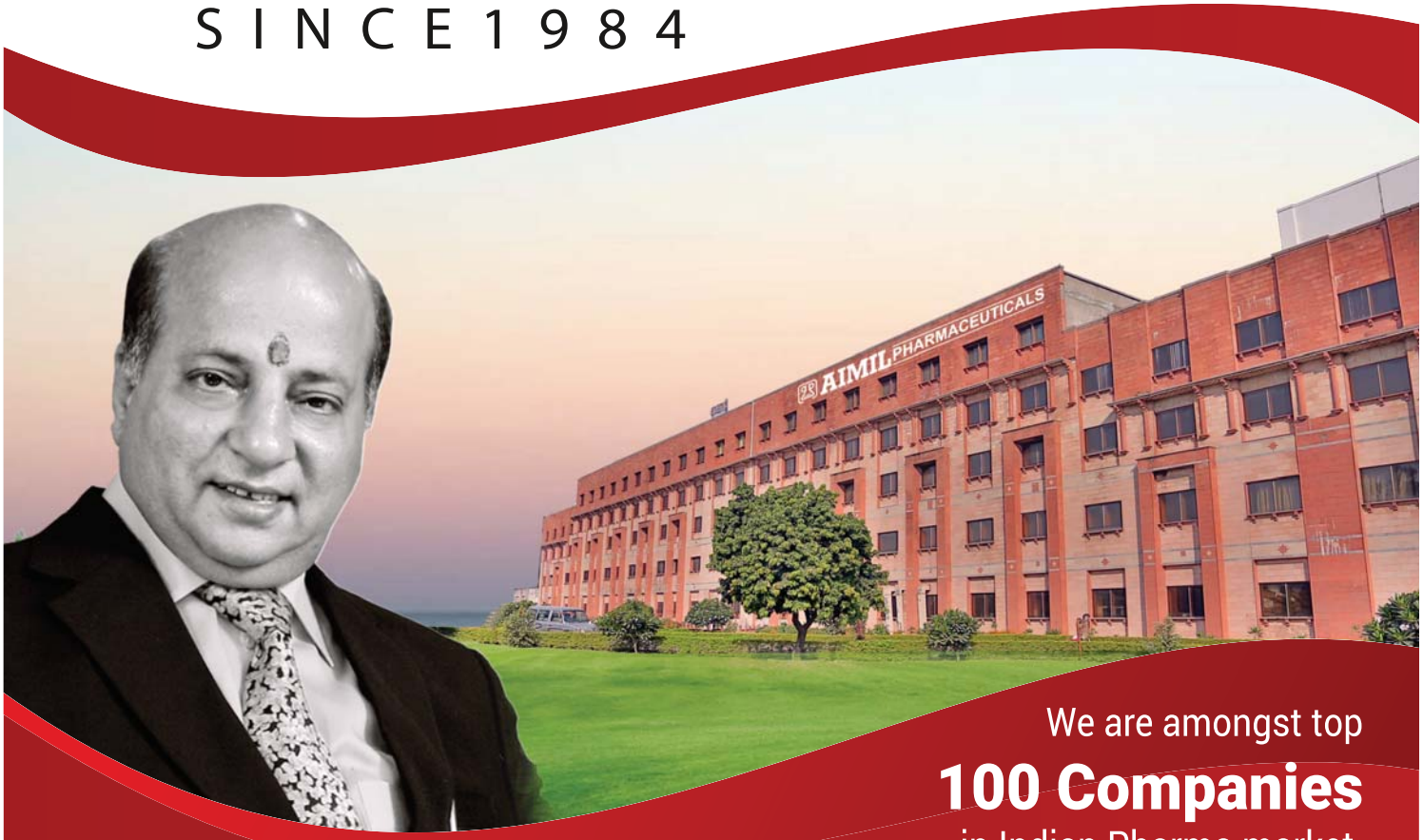

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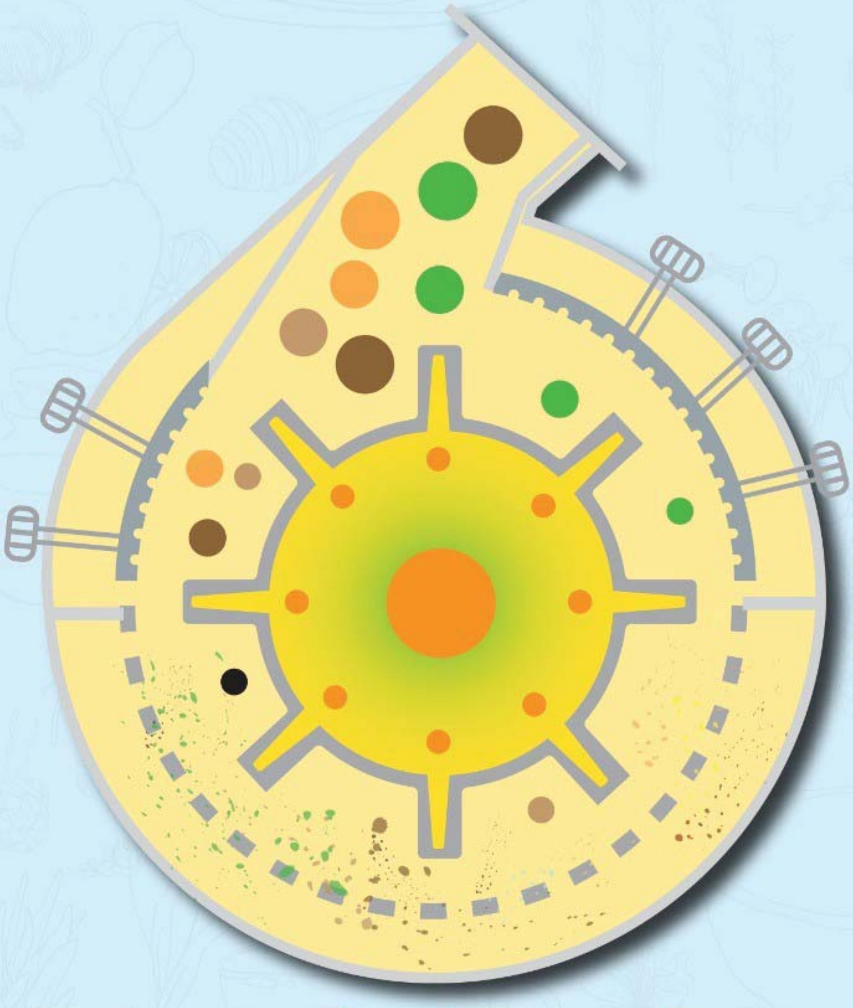

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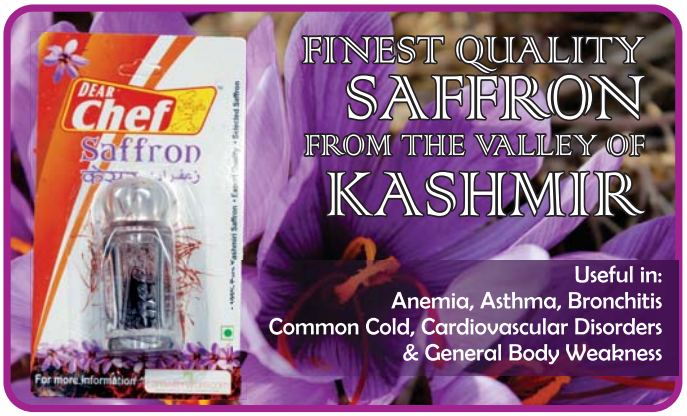

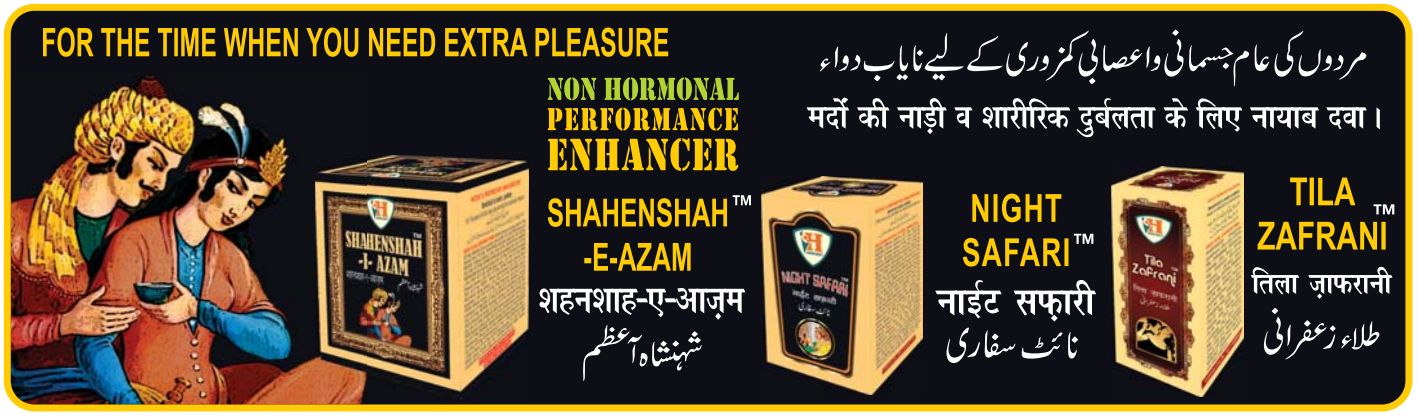

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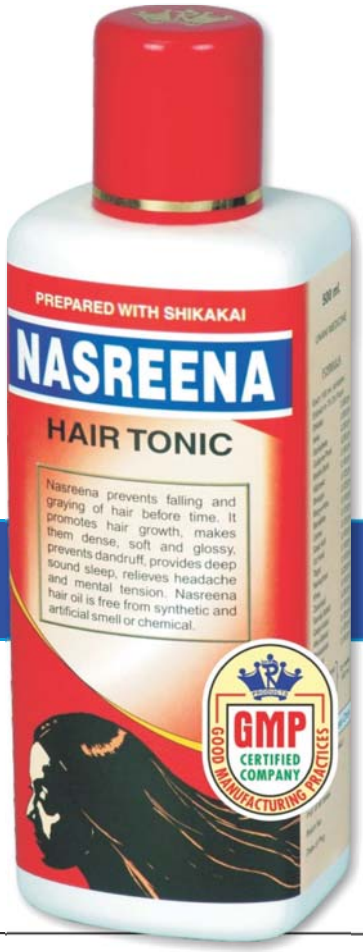

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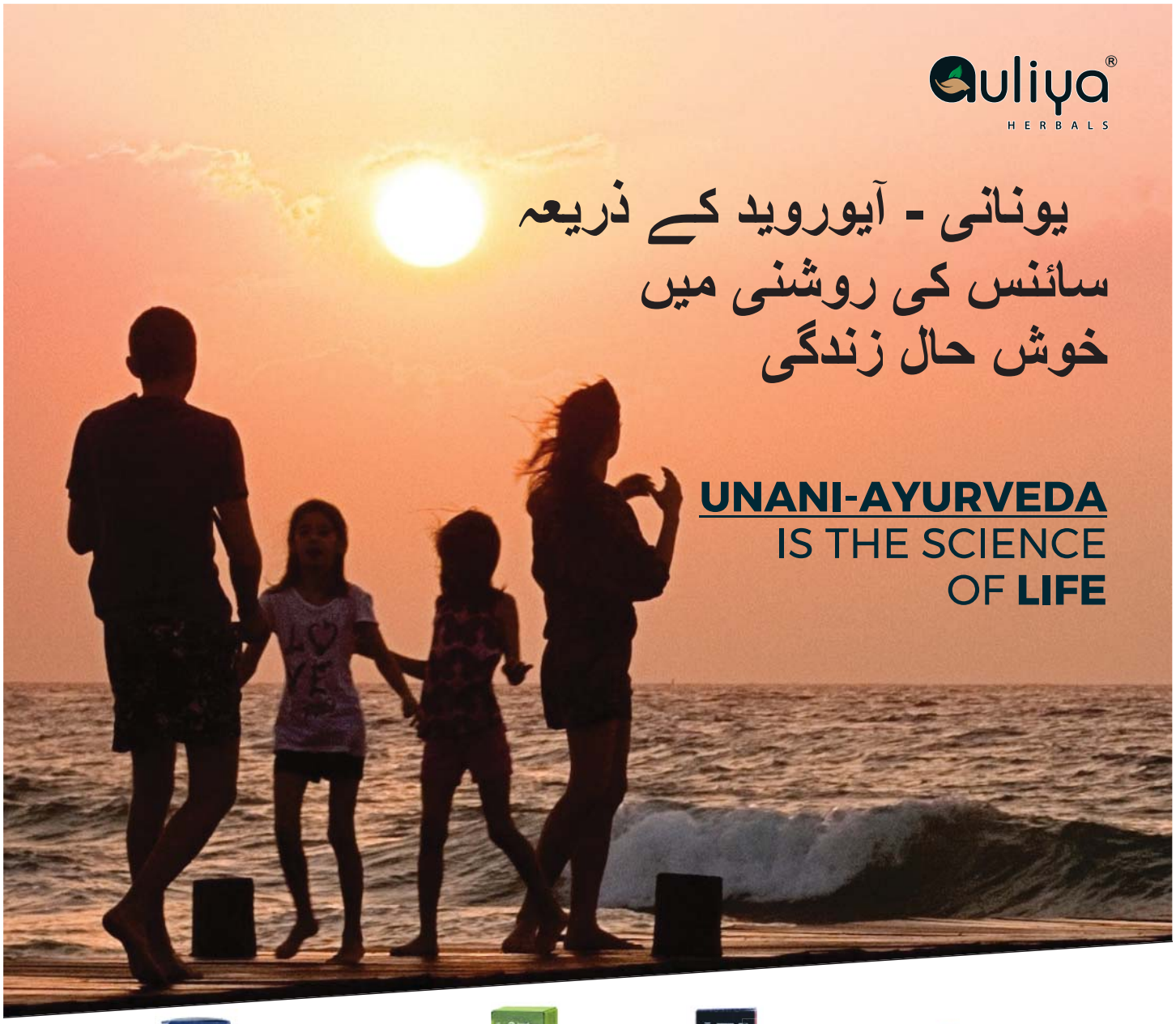

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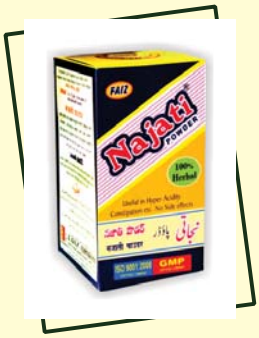

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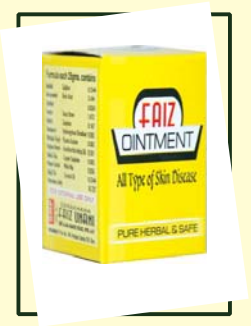

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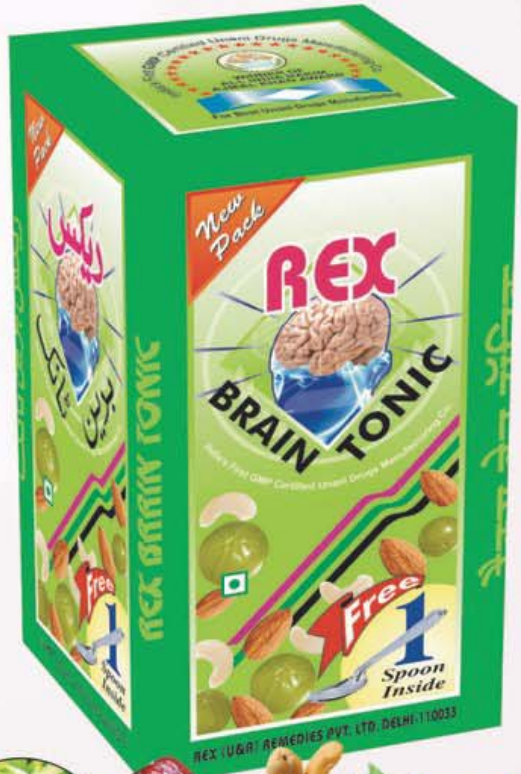

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