



SOCIETY FOR ETHNOPHARMACOLOGY, India

(SFE - INDIA)

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Contents

- **Bioinformatics in herbal drug discovery: An overview**
- **Report of the National seminar on “Analytical Techniques for Drug Discovery & Development from Natural Products” on September 24, 2016, Kolkata**
- **Publication Highlight**
- **National News:**
- **Awareness Program at Azamgarh**
- **First site named “Charak Vatika” under the project Herbal and Medicinal Plant Nursery ‘inaugurated at Sillari near Nagpur**

Regulatory News:

- **Government of India made Expiry date mandatory for Ayurvedic, Sidda or Unani Medicine effective vide G.S.R. 789 (E) dated 12th August 2016**
- **Public Notice issued by Government of India**
- **New Awards instituted by SFE**
- **Obituary**
- **Upcoming Events**

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Editorial

Resolutions adopted in the recently concluded 17th (ICDRA) held at Cape town emphasizes on the safety of herbal medicines. In which the member states are advised to adopt the guidelines of WHO pertaining to herbal medicines and to implement appropriate communication strategies aimed at consumers, health care providers, manufacturers and distributors of herbal medicines, in order to facilitate them to make informed decision in their use and clinical application. They are also encouraged to share good practices in setting key objectives, and/or action taken to overcome safety concerns of herbal medicines, among Member States. Hope implementation of these recommendations will help the member states to ensure evidence based medicines.

Secretary's Desk

Dear Friends

Greetings for the New Year to all the members of SFE-India.

In the 7th World Ayurveda Congress and Arogya Expo, SFE-India organized the International Conclave on “Ethno-medicine, Ethnopharmacology and Traditional Health Practices” during December 03 - 04, 2016 at Science City, Kolkata. This was the first ever event happened in our Society to highlight the importance of Traditional healers in natural product development.

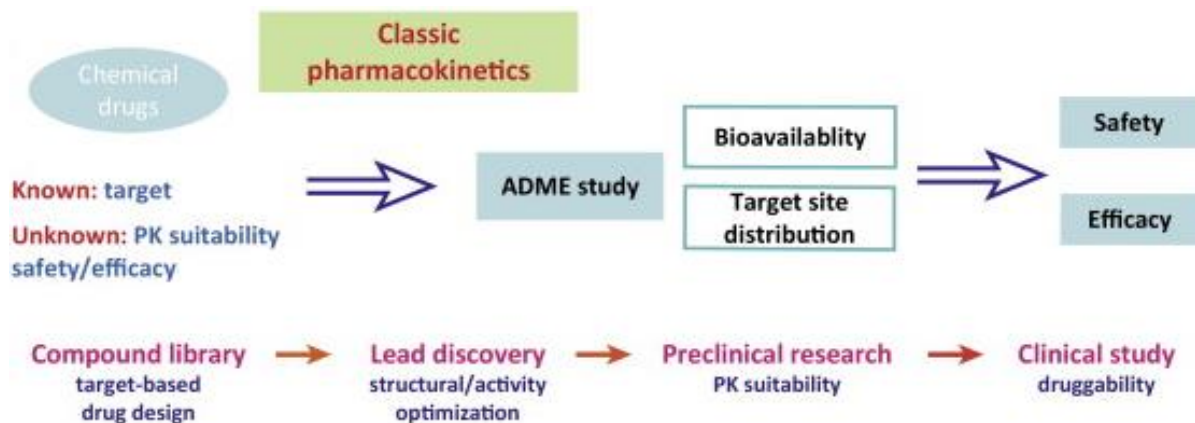
The 4th International Congress of Society for Ethnopharmacology (SFEC 2017) on “Healthcare in 21st Century: Perspectives on Ethnopharmacology and Medicinal Plant Research” will be organized at Uka Tarsadia University, Surat, Gujrat, India during February 23-25, 2017. I am sure you will have a unique opportunity to develop fruitful collaborations and stimulating ideas in the field of Ethnopharmacology and medicinal plant research from eminent speakers around the globe. I would like to invite you to join this congress and explore the opportunities.

Prof. Pulok K Mukherjee, Secretary, SFE-India

Bioinformatics in herbal drug discovery: An overview

Dr. Subarna Roy, Scientist E, Regional Medical Research Centre (ICMR), Nehru Nagar, Belagavi, 590010.

Herbs had been the mainstay of medical care and practices over centuries and civilizations. Practice of herbal medicine flourished through folk culture and organized systems like Ayurveda, Chinese Traditional Medicine, Siddha, Unani, etc. Modern medicine evolved as the organized system over the past few decades are based on modern day drugs, many of which have originated from natural sources. However, because of high price of modern health care, adverse effects of many drugs, lack of drugs for difficult-to-treat, emerging lifestyle and infectious diseases including cancers, a renewed thrust has been given lately to traditional and folklore medicines. The renewed interest, coupled with governmental policy resulted in a tremendous increase in the herbal drug industry lately. The annual demand of botanical raw drugs in India has been estimated at 3,19,500 MT for the year 2005-06. About 960 medicinal plants are in trade in India. A priority list of 176 medicinal plant species in high trade i.e. species with annual trade of >100 MT each, has been drawn to focus attention for their management. However, the process of classical drug discovery is costly and time-consuming.



The herbal drug industry is adopting various strategies to overcome the problems of drug discovery. Simulation studies are being done on computers to reduce costs. To increase data output and save time, high-throughput techniques and multiplexing is increasingly being used. Automation is used primarily to minimize human errors. Therefore, one must be able to generate and cope with a large amount of data in a short span of time and most importantly, must have complete trust on the process that generated the data. Emergence of bioinformatics tools has opened a new area of research in drug discovery process. Some of the many uses of bioinformatics in the drug discovery process are listed here.

Identification of target disease: First the disease to be targeted and all that is known about it is identified. Structures of key metabolic players are determined next. Then the known existing molecules or those from hypothesized remedies are identified and their structures are determined. Here, it is also important to look at very similar afflictions and their known treatments. However, it has to be borne in mind that target identification alone is not sufficient to achieve a successful treatment of a disease. A real drug needs to be developed.

Screening of interesting compounds: Bioinformatics methods (eg. docking) have been developed to virtually screen target(s) for compound(s) that bind and inhibit a particular protein. *In silico* docking studies are carried out to find the 'lock and key' fits. Issues related to multiple locks and keys are also taken care of. This drug must influence the target protein in such a way that it does not interfere with normal metabolism of the patient. At most times, compounds that are likely to have some activity against the disease are screened. These may be only marginally useful at this stage and may have severe side effects but these compounds provide a starting point for refinement of their chemical structures.

Detection of molecular basis of action: If it is known that a drug must bind to a particular spot on a particular protein or a nucleotide, then the drug can be tailor-made to bind at that particular site. This is often modeled computationally using a variety of techniques using software's. The primary way of determining what compounds would be tested computationally is determined by the researchers' understanding of molecular interactions, or by brute force method of screening a large number of compounds from a database of available structures. Rationalization of the drug design techniques is subsequently carried out as the next step.

Refinement of compounds: Once a number of lead compounds have been found, computational and laboratory techniques are used in refining the molecular structures to give better drug activity and fewer side effects. This is done both in wet laboratory and computationally by examining the molecular structures to determine which aspects for both the drug activity and the side effects. Drugs are then modified structurally to achieve desired activities. Computer aided Drug Designing

(CADD) is a specialized discipline that uses computational methods to simulate drug-receptor reactions. CADD methods are heavily dependent on Bioinformatics tools, applications and databases. As such there is considerable overlap in CADD research and bioinformatics.

Pharmaceutical companies always search for new leads to develop into new drug compounds. One such search method is Virtual High-Throughput Screening (vHTS). In vHTS, protein targets are screened against databases of small-molecule compounds to find out which of them bind strongly to target. If there is a 'hit' with a particular compound, it can be extracted from the database for further testing. With today's computational resources, several million compounds can be screened in a few days on sufficiently large clustered computers. Pursuing handful of promising leads for further development can save researchers considerable time and expenses. Eg ZINC is a good example of vHTS compound library. In CADD research one often knows the genetic sequences of multiple organisms or the amino acid sequences of proteins from several species. It is very useful to determine how similar or dissimilar the organisms are based on their gene or protein sequences. With this information, one can infer the evolutionary relationships of the organisms, search for similar sequences in bioinformatics databases and find related species to those under investigation. There are many bioinformatics sequence analysis tools that can be used to determine the level of sequence similarity. An important challenge in CADD research is the determination of 3D structures of proteins. Most drug targets are proteins and therefore knowledge of their 3D structure in detail is of immense importance. It is estimated that the human body has about 5,00,000 to 10,00,000 proteins. However, the 3D structures of only a small fraction of these proteins are known. Homology modeling is one method to predict 3D structures of proteins. In Homology Modeling, the amino acid sequence of a specific protein (target) is known, and the 3D structures of proteins related to the target (template) are known. Bioinformatics software tools are then used to predict the 3D structure of the target based on the known 3D structures of the templates. MODELLER is a well-known tool in homology modeling and the SWISS MODEL repository is a database of protein structures created with homology modeling.

Subtractive Genomics Approach: This approach is often used to find new putative drug targets, which aid new drug discovery. Proteome consisting of all known proteins of a pathogen is retrieved from database. Paralogues or duplicates from the list are removed with help of resource like CD HIT Web server at a certain % threshold which results in a subset of protein sequences. BlastP is generally performed against human proteome to identify non-homologous protein sequences that yield even fewer non-homologous protein sequences. The proteins are then generally subjected to DEG BlastP (Database of Essential Genes and Genome) to find proteins that are essential for the pathogen in question. The sub-cellular locations of these proteins can be predicted using software's. Docking studies can then be performed with leads or with known substances that show activity against the pathogen to establish the likely mode of action. The above approaches are only a few of the varied applications of bioinformatics used often for simple drug discovery research. With rapidly growing databases and digitization, advancement of computational speed and biology, it is expected that the use of bioinformatics will rise tremendously over the next decade.

Report of the National Seminar on “Analytical techniques for drug discovery & development from natural products” on September 24, 2016, Kolkata

The 3rd Convention of the SFE – INDIA, 2016 was jointly organized at Jadavpur University by the Society for Ethnopharmacology (SFE - INDIA) in association with the School of Natural Product Studies, Jadavpur University, Kolkata, on September 24, 2016. The theme of this National Seminar was “Analytical Techniques for Drug Discovery & Development from Natural Products”. The main objective of this seminar was to enlighten the participants about the modern analytical techniques generally used for Natural product research. Experts on the specific techniques and instruments were invited from the Industry who delivered their valued comments and inputs in this program. Professionals from the academia, industry and students participated in full strength. The program was inaugurated by renowned dignitaries like- Prof AS Verma, Pro Vice-Chancellor, Jadavpur University. Dr. Jayram Hazra, Director, NRIADD, CCRAS, AYUSH, Govt. of India, Kolkata, Dr. Debanjan Chakraborty, Director, Director British Council, East India Kolkata and many more distinguished guests were present.

One of our international collaborator Dr. Sitesh C Bachar, ISE-SFEC 2018, Dhaka University, Bangladesh made a presentation on the upcoming “Ethnopharmacology & Drug Development: Innovation meets Tradition: ISE SFEC 2018”.



Inauguration of 3rd National Convention of SFE-India 2016



Participant and dignitaries of 3rd National Convention of SFE-India 2016



Lecture delivered by Dr. D Chakraborty, Director, British Council

Dr. Debanjan Chakraborty, Director, East India, British Council Division, British Deputy High Commission, made the audience aware about the recent activities of the British Council for the promotion of education and research in India. Thereafter, experts from the industry presented modern aspects on the utility and application of sophisticated analytical instruments in the field of Drug Discovery. On behalf of Thermo Fisher Scientific India Pvt Ltd., Mr. Uttam Karmakar, Product Manager – GC & GCMS and also Dr. Sumit Mukherjee from their Mass Spectrometry Division highlighted the application of LC-MS analysis. Mr. Ritesh Oza, Product Specialist, BUCHI India Private Limited, Mumbai and Dr. N. Udupa, Professor and Research Director, (Health Sciences), Manipal University, Manipal delivered plenary lectures on the modern concepts and current techniques on the extraction and standardization relevant to natural product research. Prof. Parasuraman Jaisankar, Chief Scientist & Head, Chemical Biology, Indian Institute of Chemical Biology, Kolkata highlighted on the Modern NMR Spectroscopic Techniques with particular importance in Natural Products Research. Finally, Dr. Sougata Sinha Ray, Application Scientist, GE healthcare Life Science, Kolkata presented an interesting talk on BIACORE which is technically a Surface Plasmon Resonance (SPR) technique presently much relevant to screening and kinetic characterization of drugs. This 3rd Convention of the SFE – INDIA, 2016 was concluded with numerous enthusiastic oral presentations of the participants from both academia and industry.



Gazette Notification on Food Safety and Standards (Packaging and Labelling) Third Amendment Regulation, 2016 on the use of Plant Sterol (Phytosterols), Isomaltulose, High Fibre Dextrin and Food Safety and Standards (Food Products Standards and Food Additives) Fourth Amendment Regulations, 2016 relating to ARA & DHA, Isomaltulose, High Fibre Dextrin in various food products. (Uploaded on: 25.07.2016).

These are some mandatory labeling requirements that has been suggested :

- Contains Isomaltulose----- (calories)
- Contains Dietary Fibre (Dextrin) ----- (Source of soluble Dietary Fibre)
 - Contains Plant Sterol (as Phytosterols) ---g/100g or 100ml.
- Patients on cholesterol lowering medication should use the product under medical supervision
- May not be nutritionally appropriate for pregnant and lactating women and children under the age of five years.
- Consumption of more than 3g/day, total of sterol, stanols, or combination thereof, should be avoided

Publication Highlights:

Planta Medica (2016) - In vitro metabolic stability and permeability of gymnemagenin and its in vivo pharmacokinetic correlation in rats - A pilot study - Rammohan Bera, Amit Kundu, Tuhinadri Sen, Dipan Adhikari, Sanmoy Karmakar. Vol – 82: Pages 1-7(PLAMED-2015-08-0846-OP) - **Thomson Reuters**

National News:

Awareness Program at Azamgarh:

National Pharmacy Week was celebrated on 26 Nov. 2016, Saturday at Pharmacy College, Azamgarh. It was inaugurated by founder manager Sri Bajrang Tripathi. The program was started with awareness procession in around the city to aware to the society and highlighted the role of Pharmacist for Prevention and Management of Diabetes towards a Healthy India. More than 300 students and pharmacy professionals were participated in awareness procession. The program was followed by Quiz competition, Rangoli competition, Poster making competition as well essay competition and lectures on Prevention and Management of Diabetes. The rank holders in different years of degree and diploma courses were awarded along with position holders in different competition. In the program Principal, all members of faculty and students were participated with full enthusiasm.

“Charak Vatika”-a Nursery’ inaugurated at Sillari, Near Nagpur

A unique Memorandum of Understanding is entered into between The Pench Tiger Reserve, Conservation Foundation, Nagpur and Smt. Kishoritai Bhoyar College of Pharmacy, New Kamptee, Nagpur, for the collaborative project of 'Herbal and Medicinal Plant Nursery' on the 8th of August 2016. This project is being carried out for the development and maintenance of 4 Herbal and Medicinal Plant Nurseries and provide sustainable development of the local people.

Regulatory News:

Government of India made Expiry date mandatory for Ayurvedic, Sidda or Unani Medicine effective vide G.S.R. 789 (E) dated 12th August 2016

Through this notification the expiry date of different categories of Ayurvedic, Sidda or Unani Medicine has been prescribed. The manufacturers require to print the date of expiry on the label of container or package of Ayurvedic, Sidda or Unani Medicine, no medicine shall be marketed, sold, distributed after the effective date. Every person applying for licence or renewal of licence for the manufacturing of Ayurveda, Sidda or Unani medicines defined under clause (h) of section 3 of the Act shall submit to the State Licensing Authority scientific data based self life or date of expiry of the medicine based on the Ayurvedic Pharmacopoeia of India. Provided that this sub-rule shall be applicable after three years from the date of notification of the rules.

Details available at: [www. http://ayush.gov.in/genericcontent/gazette-notification-gsr-no-789e-dated-12th-august2016-revising-shelf-life-asu-drugs](http://ayush.gov.in/genericcontent/gazette-notification-gsr-no-789e-dated-12th-august2016-revising-shelf-life-asu-drugs)

Public Notice issued by Government of India

Inviting public comments on the draft Indian Medicine and Homoeopathy Pharmacy Central Council Bill' 2016: The Ministry of AYUSH intends to introduce the Indian Medicine and Homoeopathy Pharmacy Central Council Bill, 2016 for enactment to regulate the education and practice of pharmacy in Ayurveda, Siddha, Unani, Sowa Rigpa and Homoeopathy. The draft is hereby placed in public domain for inviting comments/views of the stake-holders within 30 days. The comments/views may be sent to the below mentioned address:- Sh. Jitendra Sharma Joint Secretary, Ministry of AYUSH, AYUSH Bhawan, B Block, GPO Complex, INA, New Delhi-110023

New Awards Instituted by SFE:

*Society for Ethnopharmacology, India has introduce following
New Awards*

In the memory of Dr. P K Debnath

Society for Ethopharmacology, India

has instituted an award

“SFE -Young Enthopharmacologist Award”

To recognize the young scientist/ researchers who has made significant research contribution for promotion and development of Ethnopharmacology and Medicinal Plants.

In the memory of Prof. TuhinadriSen

Society for Ethopharmacology, India

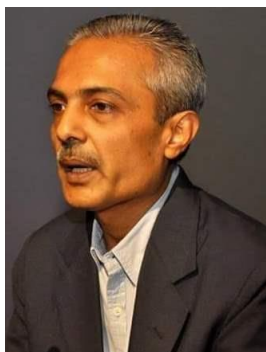
has instituted an award

“SFE –T Sen Oration Award”

To recognize the scientist/ researchers from industry and academia who has made significant research contribution for promotion and development of Ethnopharmacology and Medicinal Plants.

OBITUARY

Prof. Tuhinadri Sen



1964 - 2016

Prof. Tuhinadri Sen was born at Dhanbad, Jharkhand on the 31st of May 1964. Prof. Sen acquired his B.Pharm(Gold medalist) (1986), M.Pharm (1988) and Ph.D (1992) degrees from the Department of Pharmacy, Jadavpur University. He began his career at Delhi College of Pharmacy as Lecturer in Pharmacology and after sometime returned to Kolkata to join Jnan Chandra Ghosh Polytechnic. During his tenure there, he was awarded the prestigious Indo-French Post Vert fellowship. In 2001, Prof. Sen joined as a faculty of Dept. of Pharm Tech, Jadavpur University. Prof. Sen was later awarded with Erasmus Mundus fellowship to carry out his research work in Belgium and Ireland.

Prof. T. Sen was the Joint Director of the School of Natural Product Studies, Jadavpur University, Kolkata. He has made a wide range of research contribution in several areas including regional plants to flora and fauna of the Sundarbans; G protein coupled receptors, quorum sensing and bacterial biofilms. He has visited South Africa and Brazil for trilateral collaborative project work supported by DST, New Delhi at School of Natural product Studies, Jadavpur University. He was an active member of the Society for Ethnopharmacology, India and take active role in organizing conferences & seminars jointly with School of Natural product Studies, Jadavpur University. Prof. Sen was a dedicated educationist and philanthropist. He would work untiringly for his students and always thought of ways to help them excel. Prof. Sen has left behind a legacy motivating young students and researchers. May God give strength to his bereaved family – his wife Dr. Suchandra Sen and daughters Ms. Trinayani Sen and Ms. Tathambika Tejeswini Sen.

A good heart has stopped beating

A good soul ascended to heaven

We will never forget you

May your soul rest in peace

“Your end, which is endless, is as a snowflake dissolving in the pure air”

ISE-SFEC 2018



**18th International Congress of
International Society
for Ethnopharmacology**
www.ethnopharmacology.org

**5th & International Congress of
Society for
Ethnopharmacology, India**
www.ethnopharmacology.in

Dhaka, Bangladesh; January 13-15, 2018

***"Ethnopharmacology & Drug Development:
Innovation meets Tradition"***

Organized by

**Department of Pharmacy, Faculty of Pharmacy
University of Dhaka
Dhaka - 1000, Bangladesh
www.du.ac.bd**

In association with

**Society for Ethnopharmacology, India
Saktigarh, Jadavpur, Kolkata, India
www.ethnopharmacology.in**

- April 24-28, 2017 - 17th International Congress of the Society for Ethnopharmacology ISE: Ethnopharmacology at the crossroads of cultures and disciplines - Kaslik, Lebanon. <http://webapp.usek.edu.lb/forms/WS/ise/>
- May 10-13, 2017 - The 40th Annual Conference of the Society of Ethnobiology: State of Ethnobiology: Advocacy, Ethics, and Applications - Montreal, Canada; <https://ethnobiology.org/conference/upcoming>
- June 4-9, 2017 - 58th Annual Meeting of the Society for Economic Botany: Living in a global world: ethnobotany, local knowledge and sustainability - Bragança, Portugal; <http://esa.ipb.pt/seb2017/en>
- 3rd International Conference and Expo on Drug Discovery & Designing, September 25-27, 2017 Vienna, Austria; <http://drug-discovery.pharmaceuticalconferences.com/>
- 17th Annual Oxford International Conference on the Sciences of Botanicals, April 3rd – 6th 2017, <http://www.oxfordicsb.org/>
- 2nd International Conference on Herbal and Traditional Medicine (HTM2017), Faculty of Pharmaceutical Sciences, Khon Kaen University, Thailand, 25-27 January 2017, <http://www.htm2017.com/>

JOIN SFE-INDIA & Explore the Opportunity

"Globalizing Local Knowledge & Localizing Global Technology"

To work for the promotion of Ethnopharmacology – medicinal plants and other natural products

- | | |
|--|---|
| <p>Networking amongst the researchers in medicinal plants and ethnopharmacology around the globe.</p> <p>■ Sharing of knowledge among researchers, healthcare-practitioners, and decision-makers interested in Ethnopharmacology.</p> <p>■ Dissemination of knowledge for promotion of TM and medicinal plants</p> <p>Organizing conference, seminars, symposia, workshops etc in different parts of India.</p> <p>■ Information on activities in respect of Ethnopharmacology around the world.</p> | <p>■ Travel grant for students and young scientists and reduced registration fees to attend the events organized by the Society for Ethnopharmacology.</p> <p>■ Access to a wide network of scholars interested in the traditional medicine and Ethnopharmacology.</p> <p>■ Validation and documentation of TM, medicinal plants and natural products</p> <p>■ Encouraging the scientists through awards, honors, grants etc.</p> <p>■ Collaborative approaches for promotion & development of TM and medicinal plants.</p> |
|--|---|



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Renew Your Membership

&

Explore the Opportunity

----- We look forward to continue our bonding

