



SOCIETY FOR ETHNOPHARMACOLOGY (SFE-INDIA)

NEWSLETTER

**1st Announcement of
SFEC, Nagpur,
February, 2015**

**1st Convention of
SFE-INDIA, Kolkata,
November, 2014**

**Pharmacy Education
and Medicinal Plant
Research: Role of
DST**

**Does “Natural”
Always “Safe”?**

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Editorial:

Globally herbal drugs are playing an important role in health care as they are cheap and locally available. Consumer's usual belief that herbal drugs are always safe because they are "natural", though evidences suggest that "natural" may not signify its safety, as herbs considered to be safe over many decades are now found to be associated with health hazards and herbal remedies may agonists or antagonists some drug therapies. The modern technology enabled us to detect minute amounts of carcinogenic/toxic chemicals in herbs and evaluate potentially hazardous effects of herbs used in traditional medicine. Usually medicinal plants contain complex mixture of hundreds of chemicals, while a synthetic drug consists of a single chemical. It is easy to figure out the activity and side effects of a single chemical, but to map all the complex interactions and synergies between the chemicals present in a plant, or crude plant extract used traditionally is a gigantic task. Thus, the term "toxic" is a viewpoint. Many ordinary foods contain allergic or 'toxic' constituents e.g., alpha gliadin produced by gluten in wheat/oats/rye, the cyanogenic glycosides in many fruit/seeds, the thiocyanates of cabbage family, alkaloids of Solanaceae and lectins of pulses (soya, red kidney beans) are regarded as safe, like water and oxygen, which in excess can kill, so quantity is an important consideration.

Does “Natural” Always “Safe”?

Dr. Sanmoy Karmakar

Herbal remedies have been the only medicines available for various human diseases for long. One third to almost half of the present day medicines has been derived from natural products, and the 1890 version of US Pharmacopeia consisted of 59% of herbal products. Antibiotics like streptomycin derived from *Streptomyces griseus* (a soil bacterium) while the immunosuppressant cyclosporine used for transplant recipients, is derived from a soil fungus. Therefore, why should we not put the conventional drugs, as well as ‘herbal products and supplements’, also derived from plants, to similar stringent regulation prior to human use. Unlike other animals, plants do not have legs to run away from danger. Thus, they produce toxic substances to discourage animals from eating them. Frequently, these products cause toxicity in humans as well [1].

Herbal experts often argue that herbal remedies were used for thousands of years, and native people did not experience toxicity but instead reaped the medical benefits [1]. The truth might be that the natives often chewed leaves or roots or prepared tea by boiling plant parts. Therefore, only small amounts of plant alkaloids (active ingredients including toxic substances) were extracted, which may have caused lesser toxicity. In addition, historical documentation of toxicity from herbal remedies may be poor because those native people may not have spoken out of respect for the healers. Today, these supplements are prepared by using modern extraction techniques and most likely contain more active ingredients to cause more toxicity [1], and many commonly used herbal medicines are found to be toxic. In 1979, the term ginseng abuse syndrome was coined as a result of a study with 133 people who took ginseng for 1 month. Most subjects experienced dose dependent CNS

stimulation, while 14 patients experienced ginseng abuse syndrome, characterized by hypertension, nervousness, sleeplessness, skin eruption, and morning diarrhea [2]. Ginkgo biloba, a product of dried leaves of ginkgo tree, popularly promoted for mental sharpness and to improve diabetes mellitus-associated circulatory disorders, as well as for impotence and vertigo. The most common adverse effects of ginkgo are gastric disturbances, headache, and dizziness. Miwa et al- [3] reported a case of a 36-year-old woman with a generalized seizure 4 hours after the ingestion of 70-80 ginkgo nuts. One commonly reported adverse effect is bleeding. Spontaneous intracerebral hemorrhage occurred in a 72-year-old woman who took 50 mg of ginkgo 3 times a day for 6 months [4]. Fessenden et al [5] reported a case of postoperative bleeding after laparoscopic cholecystectomy. The Australian Adverse Drug Reaction Advisory Committee received 11 reports of toxic interactions being associated with use of Echinacea between July 1996 and September 1997. There were 3 cases each of hepatitis and asthma; 1 each of rash, myalgia, and nausea; and 1 report of anaphylaxis. Literature reports also showed that Echinacea use is associated with contact dermatitis and anaphylaxis [6]. Garlic, promoted for lowering cholesterol and blood pressure, contains various sulfur-containing compounds, derived from allicin. As per FDA chopped garlic-and-oil mixes left at room temperature can result in fatal botulism food poisoning, as it produces anaerobic, low-acid conditions where the spores of *Clostridium botulinum* can produce a deadly toxin [7].

]. Ephedra (Ma huang), known as herbal fen-phen, is advised to fight obesity. Herbal fen-phen products found to contain St John's wort and are marketed as "herbal Prozac."

Haller and Benowitz [8] analysed almost 140 reports of ephedra-related toxicity between June 1997 and March 31, 1999. The authors opine that 31% of all the cases were related to ephedra. Among these about 47% involved cardiovascular problems and 18% with the CNS problem. Hypertension was the single most frequent adverse reaction, followed by palpitations, tachycardia, stroke, and seizure; while 10 resulted in death, and 13 caused permanent disability [8].

Therefore, despite the common belief about the safety of natural products there is nothing wrong in implementing strict regulations of predictive toxicity studies and safety assessments for natural products and food supplements.

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Pharmacy Education and Medicinal Plant Research: Role of DST

Dr. (Mrs.) Rita Banerjee

“It is science alone that can solve the problems of hunger and poverty, of in sanitation and illiteracy, of superstition and deadening of custom and tradition, of vast resources running to waste, or a rich country inhabited by starving poor... Who indeed could afford to ignore science today? At every turn we have to seek its aid... The future belongs to science and those who make friends with science.”

...Pandit Jawaharlal Nehru

Pharmacy is recognized as a complimentary health care profession concerned in collection, preparation, standardization and dispensing of drugs with a focus on patients. The first pharmacy was opened in Bagdad in 770 under Caliphe AL-Mansoor, while its legal regulations was initiated in 1231, when the medicine was divided into 3 groups:

dogmatic medicines related to diagnoses, manual medicine for surgical interventions and pharmaceutical medicine that collects, mixes and conserves medicines.

In India, Pharmacy Institution was originated in 1899 in Madras for training, followed by the State Medical Faculty of Bengal in 1928. In 1932 Prof. ML Schroff, father of Pharmacy education in India, started UG program at BHU, then the degree programme was started in Andhra University (1937), Madras University (1938), Bombay University (1943), Punjab University (1944) and L.M. College, Ahmedabad (1947). With the enactment of the Pharmacy Act 1948, the statutory regulation of Pharmacy Institutions was established and the Pharmacy council of India (PCI) was established in 1949 with the first education regulations (ER) in 1953, with subsequent amendment in 1972, 1981 and

1991. Presently more than 1500 institution offering Diploma, UG, PG and Pharm D with an annual intake of 1,00,000+ students to cater the needs of the Pharmaceutical industry. Today India have 5.6 pharmacists (world average 3.4) per 10,000 people i.e. approximately one pharmacist per physician. In order to cater specialized manpower need pharmacist now shifted its role from dispensing medicines to patient care as clinical pharmacy, and thus, PCI introduced Pharma D Programme (6 years Post HSC) without hampering the existing B. Pharm curriculum.

Another important area is the upgradation of institutional infrastructure. Thus, Govt of India, introduced several programme through the DST, DBT, DSIR/CSIR, Ministry of Health, Department of Health Research, ICMR, DRDO, and Life Science Board have as project or specific programme like FIST (Facilities for Infrastructure Development). To date several institutions, received crores of rupees grants from research funding agencies, having 6 year Pharm D program.

The Indian pharmaceutical industry despite phenomenal progress in last 30 years lacks R&D based new novel drugs development leaving India's Pharma Industry to be generic dominated. Due to high risks of failure, very few companies work for development of New chemical or Biological Entity (NCE/NBE) as compared to US, Japan, Belgium & France.



Today the global generic market is estimated to be US\$ 84 billion where India's share is only US\$ 19 billion. The growing Biological sectors are technologically complex and need higher costs for R&D. Though India produce a large number of technical graduates they lack exposure in key areas like Toxicology, Clinical Research & Quality control, Bioinformatics, Regulatory issues etc. Thus, Universities & educational Institution need upgradation. Economic liberalization has paved the way for globalization inviting legal trade agreements that are enforceable. India being a signatory to the WTO since 1995 and a partner country in GATT World Trade Organization, is bound by the trade agreement and policies of WTO charter.

India initially adopted process patent and based on TRIPs & WTO agreement amended IPA to allow product patent. Thus, soaring drug prices, intense competition, new drug discovery, can increase social costs. India is now an emerging hub for Contract Research, Bio-Pharma, Clinical Trials and Clinical Data Management. The industry needs efficient Government policies (e.g Industry-Academia collaboration) to be complement to attract investment by enabling healthy profits for R&D. The collaborating academic researchers with requisite industry funding can generate hopes of commercializable products; while Government support will bring desired momentum for forging such partnerships. It is estimated that by 2015, over 40% of the new drugs approved by US FDA are likely to be Biologics indicating need for development of biologics by the Pharmaceutical R&D targeting the Vaccine and the Bio-Similar market. Pharmacy practice i.e. community and hospital pharmacy is also offering a multitude of possibilities and career options in pharma industry. The emergence of multi-specialty corporate hospitals & CROS in clinical research can help, as academia can teach skills to new generations. Thus, pharmacists render useful social service and learn to cultivate perpetual good for human society, as a role model for academia and

stand for values for professional well-being and advancement.

Pharmaceutical Research & Development Support Fund (PRDSF):

Recognizing the influence of R&D on the prospects and opportunities for the growth of the Indian Drug Industry, a “Drugs and Pharmaceuticals Research Programme” was initiated in 1994-95 for promoting Industry-Institutional R&D collaborations in drugs and pharmaceuticals sector for development of new drugs; while a Drug Development Promotion Board (DDPB) has been constituted to operationalise the PRDSF.

Major Achievements: In the last 5 years several proposals has been considered for financial support but few have been funded including Industry-Institutional collaborative research proposals and National Facility in Development of PLG {Poly-(dl-lactide-co-glycolide)} for sustained drug delivery of tuberculosis drug, standardization of herbal antimalarial drug; PLG nanoparticle based oral sustained release drug delivery for MDR tuberculosis; Drug for Glaucoma; Evaluation of liposomal Amphotericin B in Leishmania; Pre-clinical investigation on non-viral gene therapy of chronic wounds; Identification and optimization of lead anticancer molecule; Botanical Immunomodulators as adjuvants for vaccine; Quality assurance and validation of Ayurvedic formulation for life-style related and gynaecological disorder; Clinical & Experimental Evaluation of Reno Protective Effect of Maha Nimb, Rhubarb. The PRDSF proposals include Clinical development of DRF 7295 for metastatic cancers of GI tract (Dabur Research Foundation); Formulation of protein based therapeutics (INTAS Pharmaceuticals), Development of atherocid for coronary heart disease (Surya Pharmaceuticals); Tetravalent Dengue Vaccine using 30 deletion mutants and chimeric constructs of DEN-1-4, viruses, Formulation development, stability studies, pre-clinical and clinical studies of anti-cataract herbal eye drops, C-Phycocyanin in Cox-2 Inhibition and Diagnostics.

❑ SFE News:



SFE - Executive committee meeting



Preparatory Meeting of SFEC 2015, Nagpur

The Society Organized : A General Lecture series on the topic “Opportunities in Natural Product Research”



**SFE General Lecture Series addressed by
Dr. Prakash Itankar**



**SFE General Lecture Series addressed by
Dr. Tapan Kumar Mukherjee &
Dr. Debiprasad Chattopadhyay**

❑ *For dissemination of knowledge the society is organizing seminars, conferences and workshops throughout the year in different parts of India.*

- The 14th International Congress of the International Society for Ethnopharmacology (ISE) will be organized in collaboration with the Sociedad Latinoamericana de Fitoquímica, and will be hosted in Puerto Varas, Chile, from September 23-26th, 2014. <http://14ise-slf.utralca.cl/>; <http://www.ethnopharmacology.org>
- International Conference on “Frontiers in Pharmaceutical Science & Research” with the theme “Cutting edge technology in New Drug Discovery & Drug Delivery Systems” on 11th – 12th October 2014 at Columbia Institute of Pharmacy, Raipur, Chhattisgarh.
- A National conference is being organized by the Society for Ethnopharmacology, Jhansi Chapter on “Ethnopharmacology in Drug Development: Prospects and Challenges” at the at the Gandhi Auditorium, Bundelkhand University in association with the Institute of Biomedical Sciences, Bundelkhand University, Jhansi, during November 14-15, 2014; www.bujhansi.org/SFE_Jhansi-2014.
- A national seminar on “Opportunities in Medicinal Plant Research” will be organized in Association with the School of Natural Product Studies, Jadavpur University during November 29-30, 2014 at Jadavpur University, Kolkata. www.ethnopharmacology.in; <http://www.jaduniv.edu.in>
- The second International congress of the society (SFEC 2015) will be organized by the Department of Pharmaceutical Sciences, R.T.M. Nagpur University, Nagpur, India during February 20-22, 2015. Eminent scientists all over the world will join in this event. www.sfec2015.com

❑ All the members are requested to take part in these events.

For further details you may visit our website: www.ethnopharmacology.in.

ACHIEVEMENTS OF MEMBERS

❑ Technology developed for Diabetes Management



National Botanical Research Institute and Central Institute of Medicinal & Aromatic Plants, developed a scientifically validated herbal formulation NBRMAP-DB for the management of diabetes, was launched by the Honorable Vice President of India and Director NBRI on 22 Feb. 2014 at Vigyan Bhawan, New Delhi. It is available to industries for commercialization.

Quality control parameters of indigenous herbal drugs by Pharmacognosy & Ethnopharmacology Division, National Botanical Research Institute (CSIR), Lucknow:

Comparative pharmacognostic evaluation (organoleptic, macro-microscopic, physicochemical parameters, HPTLC fingerprinting) of five plants including *Calotropis procera* and *C. gigantea* bark as 'Aak' were developed as identification markers.

HPTLC fingerprint profile of methanol extracts along with the marker compounds. 1, *Calotropis procera*; 2, *C. gigantea*; R1, β -Sitosterol; R2, Lupeol; R3, Ursolic acid; R4, Caffeic acid; R5, Ferulic acid.

❑ Some Recent Publication of Members:



Aromatic interaction profile to understand the molecular basis of raltegravir resistance

Tuniki Balaraju · Amit Kumar · Chandralata Bal ·
Debrasad Chattopadhyay · Nivedita Jena ·
Naresh Chandra Bal · Ashoke Sharon



ORIGINAL ARTICLE

Evaluation of anti-infective potential of a tribal folklore *Odina wodier* Roxb against some selected microbes and herpes simplex virus associated with skin infection

D. Ojha^a, H. Mukherjee^a, S. Ghosh^a, P. Bag^a, S. Mondal^a, N.S. Chandra^a, K.C. Mondal^a, A. Samanta^a, S. Chakrabarti^a and D. Chattopadhyay^a

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³ Department of Microbiology, Vidyasagar University, Medinipur, India

Med Chem Res (2013) 22:4347–4359
DOI 10.1007/s00044-012-0449-4

ORIGINAL RESEARCH

Bioactivity guided isolation of antiinflammatory, analgesic, and antipyretic constituents from the leaves of *Pedilanthus tithymaloides* (L.)

Soma Ghosh · Debrasad Chattopadhyay · Anurup Mandal · Sudipta Kaity · Amalesh Samanta

Evaluation of an ethnomedicinal combination containing *Semecarpus kurzii* and *Hernandia peltata* used for the management of inflammation

Sonali Das¹, Hemanta Mukherjee², SK Milan Ahmed³, Pallab K. Halder³, Asit B. Mandal¹, Ambikesh Mahapatra⁴, Pulok K. Mukherjee⁵, Sekhar Chakrabarti⁶, and Debrasad Chattopadhyay²

¹Directorate of Seed Research, Kushmaur, Maunath Bhanjari, Uttar Pradesh, India; ²CMR Virus Unit, ID & B.G. Hospital, Kolkata, West Bengal, India; ³Department of Pharmaceutical Technology, and ⁴Department of Chemistry, Jadavpur University, Kolkata, West Bengal, India

Med Chem Res (2014) 23:1488–1500
DOI 10.1007/s00044-013-0758-2

ORIGINAL RESEARCH

Amberlite IRA 402(OH)-mediated synthesis and evaluation of fused tricyclic quinolinium salts as potent non-detergent type microbicidal spermicides

Maitreyee Banerjee · Shrabanti Kumar · Soma Ghosh · Rupankar Paira · Shyamal Mondal · Samjoy Karmakar · Debrasad Chattopadhyay · Rupak K. Bhadra · Nirup B. Mondal

Journal of Medical Microbiology (2014), 63, 975–980

DOI 10.1099/jmm.0.072249-0

Prevalence of hepatitis E virus infection in West Bengal, India: a hospital-based study

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Editorial

Medicinal Plants in the Prevention and Treatment of Chronic Diseases 2013

Mohamed Eddouks¹, Debrasad Chattopadhyay², Vincenzo De Feo³, and William Chi-shing Cho⁴

¹Moulay Elmal University, FST Errachidia, BP 21, 52000 Errachidia, Morocco
²ICMR Virus Unit, Division of Ethnomedicine, ID & BG Hospital, General Block 4, 57 Dr. Suresh C. Banerjee Road, Kolkata 700010, India
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⁴Department of Clinical Oncology, Queen Elizabeth Hospital, Hong Kong

Evaluation of the wound healing activity of *Shorea robusta*, an Indian ethnomedicine, and its isolated constituent(s) in topical formulation

Hemanta Mukherjee^a, Durbadal Ojha^a, Yogesh P. Bharitkar^b, Soma Ghosh^c, Supriya Mondal^a, Sudipta Kaity^a, Shanta Dutta^a, Amalesh Samanta^a, Tapan K. Chatterjee^a, Sekhar Chakrabarti^a, Nirup B. Mondal^a, Debrasad Chattopadhyay^{a,*}

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^dNational Institute of Chandra and Entero-Obesity, Beliaghata, Kolkata-700010, West Bengal, India

ORIGINAL ARTICLE

Antibacterial and antiviral evaluation of sulfonquinovosyldiacylglyceride: a glycolipid isolated from *Azadirachta indica* leaves

Y.P. Bharitkar¹, S. Bathini¹, D. Ojha², S. Ghosh³, H. Mukherjee⁴, K. Kuotsu⁵, D. Chattopadhyay² and N.B. Mondal¹

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² ICMR Virus Unit, ID & BG Hospital, Beliaghata, Kolkata, India
³ Department of Pharmaceutical Technology, Jadavpur University, Kolkata, India

Significance and Impact of the Study: The water-soluble metabolite sulfonquinovosyldiacylglyceride (SQDG) isolated from *Azadirachta indica* (Neem) possess significant antibacterial as well as anti-HSV activity. The efficacies as well as the solubility factor of SQDG substantiate a greater attention for its

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journal homepage: www.elsevier.com/locate/antiviral

A dihydro-pyrido-indole potently inhibits HSV-1 infection by interfering the viral immediate early transcriptional events

Paromita Bag^{a,1}, Durbadal Ojha^{a,1}, Hemanta Mukherjee^a, Umesh C. Halder^b, Supriya Mondal^a, Aruna Biswas^a, Ashoke Sharon^c, Luc Van Kaer^d, Sekhar Chakrabarty^a, Gobardhan Das^e, Debashis Mitra^f, Debrasad Chattopadhyay^{a,*}

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Paper

Anti-HSV activity and mode of action study of α-pyrone carboxamides

Srinivas Karampuri^a, Durbadal Ojha^b, Paromita Bag^a, Harapriya Chakravarty^a, Chandratata Bal^a, Debrasad Chattopadhyay^{a,*} and Ashoke Sharon^a

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Journal of Ethnopharmacology

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Protective effect of coconut water concentrate and its active component shikimic acid against hydroperoxide mediated oxidative stress through suppression of NF-κB and activation of Nrf2 pathway

Krishnendu Manna^a, Amitava Khan^a, Dipesh Kr. Das^a, Swaraj Bandhu Kesh^a, Ujjal Das^a, Sayan Ghosh^a, Rakhi Sharma Dey^a, Krishna Das Saha^a, Anindita Chakrabarty^a, Sreyas Chattopadhyay^a, Sanjit Dey^a, Debrasad Chattopadhyay^{a,*}

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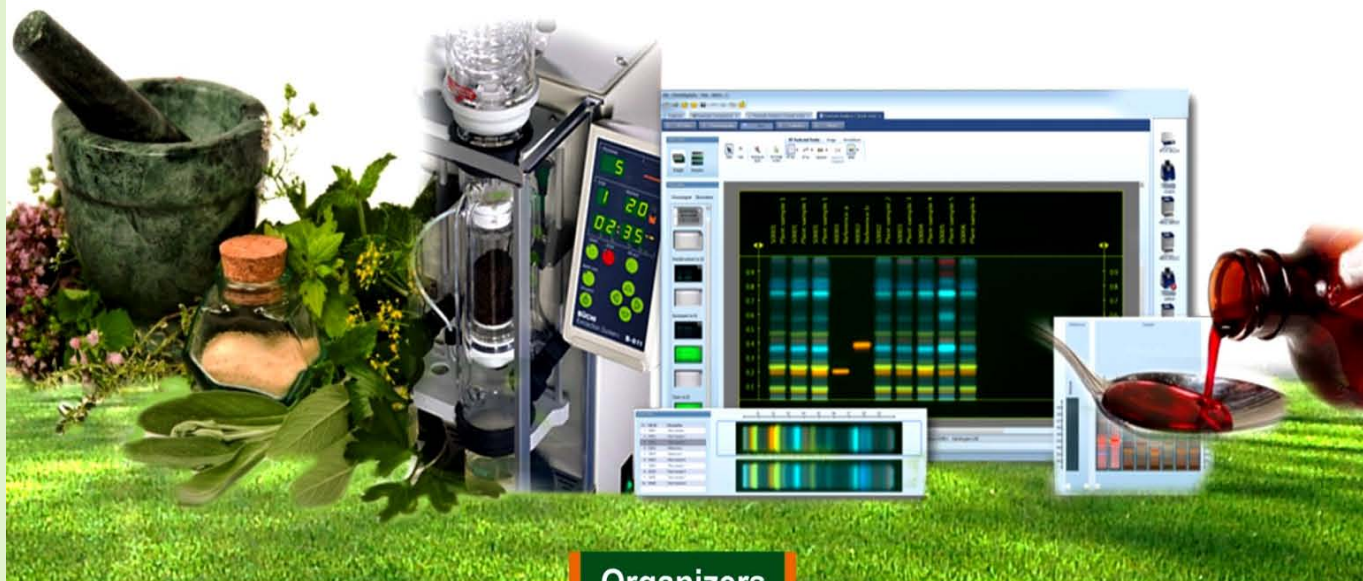


2nd International Congress of Society for Ethnopharmacology, India

Nagpur, India; February 20- 22, 2015

"Validation of Medicinal Plants and Traditional Medicine – Global Perspectives"

Venue: Chitnavis Convention Centre, Civil Lines, Nagpur



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