

## PHCOG MAG.: Researcher's Profile

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Dr Mukherjee is a wellknown personality in the natural product research. His research interests are in fields of herbal drug discovery relating to phytochemical, pharmacological, microbiological evaluation of different plants having potential phytotherapeutic effects along with studies on their phytochemical constituents, preparation and standardization of different herbal formulations and their evaluation. He has several publications in different International/National journals along with one patent in this field, besides this he has significantly contributed in the field of phytotherapy based on phytochemical phyto-pharmacological, antimicrobial evaluation of different plant species including *Moringa oleifera*, *Cassia tora*, *Azadirachta indica*, *Leucas lavandulaefolia*, *Drymaria cordata*, *Cassia fistula*, *Ficus recemosa*, *Asparagus recemosus*, Indian *Hypericum* species and many other plant species of Indian folklore and traditional medicine.

**Date of Birth:** 12 December 1968

**Nationality:** Indian

**Educational Profile:**

**D.PHARM**, 1987, State Medical Faculty of West Bengal

**B.PHARM**, 1991, Jadavpur University, Calcutta, India,

**M.PHARM**, 1993, Jadavpur University, Calcutta, India,

**P.G. DIP. IRPM**, 1994, Bhaban's College of Comm. & Mgt., Bombay, India

**Ph.D. (Pharmacy)**, 1997, Jadavpur University, Calcutta, India

**Post Doctoral Research Studies**, Leiden Amsterdam Center for Drug Research, Gorlaeus Laboratories, Dept. of Pharmacognosy, 55 Enistein Weg, 2300 RA, Leiden, The Netherlands.

#### PROFESSIONAL EXPERIENCES:

1. **Joint Director** at the School of Natural Product Studies at the Dept. of Pharmaceutical Technology, Jadavpur University, Kolkata.
2. **Asst. Professor** at J. S. S. College of Pharmacy, Ootacamund - 643 001, September 1997 to December 2001.
3. **Visiting Scientist** at the Leiden Amsterdam Center for Drug Research, Gorlaeus Laboratories, Dept. of Pharmacognosy, 55 Einstein Weg, 2300 RA, Leiden, The Netherlands



4. Chairman of several session of the Drug Information Association [DIA], USA for various aspects of botanicals:
5. **Member of the task force** on Women & Rural development of the Dept. of Biotechnology, Govt of India for the 10<sup>th</sup> Five year plan.
6. Member of the review committee of the task force of the World Health Organization [WHO] for the formulation of guidelines on various aspects of botanicals like GMP, GSP, Quality control and allied guidelines.
7. **Member of the task force** on "Medicinal Plants" of the Dept. of Science and Technology, Govt of West Bengal.
8. **Pharma Computechonology** comprising courses on Developmental methodologies for the production of secondary metabolites by plant Tissue culture techniques and allied approaches - April- May 1999 from the Dept. of Pharmacognosy, Gorlaeus Laboratory, Leiden Universitiet, Leiden, the Netherlands.
9. **Senior Research Fellow** under Council of Scientific & Industrial Research (CSIR) India.
10. **"Programming Techniques and System Design Methodologies"** containing courses on MS-Dos, Basic Programming, COBOL Programming and dBase III Plus.
11. **HPTLC Standardization of Herbal Drugs** at Anchrom Laboratories Ltd., Mumbai, a CAMAG, Switzerland recognized laboratory - July 1997 for development of HPTLC standardization procedures of Herbal Medicine.

#### AWARDS/HONORS OBTAINED:

1. **Young Pharmacy Teacher Award** - 2002 from Association of pharmacy Teachers of India [APTI]
2. **BOYSCAST Fellowship** from the Dept. of Science & Technology, Ministry of Science & Technology, Govt. of India, New Delhi -1999.
3. **AICTE Career Award For Young Teachers**- 1998 from All India Council For Technical Education, Govt. of India New Delhi.
4. **IPA Fellowship Award** - 2001 from Indian Pharmaceutical Association [IPA].
5. **DIA Research Grant Award** - 2003 from Drug Information Association [DIA], USA.

6. Associate Editor, *J. Ethno Pharmacology*, International journal on botanical research, published by Elsevier Science, the Netherlands.
7. Member to NHP [SIAC], DIA, USA - Selected as member from India to DIA, USA.
8. Member of the Editorial Board of *Phytotherapy Research*, an International journal published by John Wiley & Sons Ltd., Chichester, Sussex, England, U.K.
9. Member of the Editorial Board of *J. Oriental Pharmacy and Experimental Medicine [OPEM]*, an International journal published by Korean Institute of Oriental Pharmacy, South Korea.
10. Member of the Editorial Board of *J. Natural Remedies [JNR]*, an Indian journal published by Natural Remedies, Bangalore.
11. Member of the Editorial Board of *J. Pharmaceutical Research*, an Indian journal published by Krupanidhi College of Pharmacy, Bangalore.
12. Member of the Editorial Board of *J. Pharmaceutical Education*, an Indian journal published by Association of Pharmaceutical Teachers of India [APTI].
13. Chairman of the Session on "GMP in botanical drug" for the 37<sup>th</sup> Annual conference of the Drug Information Association, USA 2001.
14. M.N. Dev. Memorial Award 1987.
15. Senior Research Fellowship (SRF) from C.S.I.R., Ministry of Human Resource Development, New Delhi 1994-1997.
16. Fellow of the Institute of Chemists, India (FIC) from Indian Institute of Chemists, Calcutta 2003.
17. Associateship of the Indian Institute of Chemical Engineers (AIICHE) from Indian Institute of Chemical Engineers, Calcutta, 1996.

#### PUBLICATIONS

A) Research Papers:	76
International Journal:	48
National Journal:	28
B) Scientific abstract:	33
C) Proceedings:	6
D) Citation Index ISI:	43
E) Scientific talks:	21
F) Books:	5

1. "Quality Control on Herbal Drugs"- Pulok K. Mukherjee, Eastern Publishers (Business Horizons Ltd.) New Delhi 2002, 816 pages, ISBN 81-900788-4-4.
2. "GMP in Herbal Drugs" - Pulok K. Mukherjee and Rob. Verpoorte (Edited) Eastern Publishers (Business Horizons Ltd.) New Delhi 2003, 400 pages, ISBN 81-900788-5-2.
3. "Plant Products with Hypochlesterolemic Potentials" - Pulok K. Mukherjee in: *Advanced in Food and Nutrition Research*, Vol 47, Steve L Taylor (Edited), Elsevier Science, USA, 2003, 277-338, ISBN 0-12-016447-7.
4. "A Treaties on Natural Product Studies" - Pulok K. Mukherjee and Mrs. Kakali Mukherjee, Allied Book Agency, Kolkata, India (in press).

5. "Medicinal Plants Cultivation Protocols" - V. Ramsumder, S. Rajan and Pulok K. Mukherjee in *Biotechnology Avenues for Entrepreneurship Development*; Edited by J. K Arora and SS Marwaha, Published by Punjab State Council for Science and Technology, Chandigarh, India 2001, pp 93-102.

G) General Article:	13
H) Monograph:	17
I) Reports:	07

#### Ongoing Projects

1. DST SERC Research Project F. No. SP/SO/HS-17/2002 for the project entitled - "Development and Evaluation of Phytosomes - A Value Added Herbal Drug Delivery System" by Department of Science and Technology (DST), New Delhi.
2. UGC Major Research Project F. No. F.7-18/2003 (SR) for the project entitled - "Lead Findings in Indian *Hypericum* Species" by University Grant commission, New Delhi,
3. INDC Research Project for the project entitled - "Value added herbal formulation development" by Indian National Drug Company Private Ltd, Kolkata.
4. AICTE project under TAPTEC scheme F. No. 8017/RDII/NPJRO/TAP-25/2002-2003 for the project entitled - "Development of marker analysis profiling of herbal drugs" by All India Council for Technical Education, New Delhi.
5. DIA project entitled 'Pharmacovigilance study on a few botanical preparations used in ayurvedic medicine in India' by Drug Information Association, Horsham, PA, USA

#### PROJECTS ONGOING FOR PH.D. RESEARCH STUDIES

- i) "Cognitive evaluation of some Indian Medicinal plants for Neuronal inflammatory condition" KFH Nazeer Ahmed, Registered for PhD, February 2003 [ongoing]
- ii) "Lead finding from Indian *Hypericum* species" Atul Murlidhar Wahile, Registered for PhD, April 2003 [ongoing]
- iii) "Phytomedicinals for cardiac hypertrophy" S.Raja, Registered for PhD, August 2003 [ongoing]
- iv) "Herbosomes -Value added Herbal drug delivery system" Kuntal Maity, Registered for PhD, September 2003 [ongoing]
- v) "Exploring Herbal formulations from Indian system of medicine" Sujay Rai , Registered for PhD, January 2004 [ongoing]
- vi) "Evaluation of the neuroprotective role of some Indian medicinal plants and poly(ADP-ribose)polymerase inhibitors in nitrite intoxicated/global cerebral ischemic rats " D. Kumaran , Registered for PhD, May 2004[ongoing]
- vii) "Development of evaluation profile of some potent herbal drugs" T. Tamizhmani, Registered for PhD, July 2001 [Pharmacy].
- viii) Comparative evaluation of different species of *Wadelia* based on their pharmacognostical, phytochemical and pharmacological potentials; S. Suresh Kumar, Registered for PhD, October 2001.

#### PROJECTS COMPLETED FOR POST GRADUATE RESEARCH STUDIES

- I. "Lead Finding from *Araucaria bidwillii* Hook. As Antioxidant" - V. Kumar, 2004

- II. "Value added Herbal Formulation with Natural Flavanoids" - Arunava Gantait , 2004
- III. "Evaluation of Pharmacognostical, Phytochemical and Pharmacological Profiles of *Bauhinia purpurea* Linn. Leaves" - TK Gopal, 1997-1998.
- IV. "Studies on *Cryptostegia grandiflora* Roxb. Leaves" - R. Gunasekharan, 1998
- V. "Screening of Some Plants With Wound Healing Potentials" - Sobha Sherine, 1999
- VI. "Development of Standardization Profiles of Some Herbal Homeopathic Tinctures" - Manoranjan Shau, 1999.
- VII. "Comparative Antipyretic Evaluation of Some Potent Plants" - SP Muruges, 2000.
- VIII. "Screening for the Antifertility Activity of Some Potent Plant Species of Nilgiris" - MJ Praveen, 2000.
- IX. "Chromatographic Standardization Profiles of Some Herbal Homeopathic Tinctures" - Avijit B. Dorle, 2001
- X. "Evaluation of Antiviral and Biochemical Potentials of Some *Hypericum* Species of India" - Atul M. Wahile, 2001.

## News Release May 17, 2005 For Immediate Release Research on Black Cohosh Supports Benefits in Menopause Herb Science Group Shows Weaknesses of New Unpublished Study

Austin, TX (May 17, 2005). The popular herb black cohosh reduces hot flashes and other symptoms associated with menopause in most published clinical trials, said the American Botanical Council (ABC), a leading nonprofit herbal science organization. ABC was responding to a press release issued May 15 summarizing an unpublished double-blind, placebo-controlled clinical trial on 132 women conducted by researchers at the Mayo Clinic in Scottsdale, Arizona.<sup>1</sup> The researchers concluded that black cohosh pills used in their trial did not provide any noticeable benefit for menopause symptoms when compared to placebo. The findings are being reported at this week's meeting of the American Society of Clinical Oncology in Orlando, Florida.

ABC stressed that there are numerous weaknesses and problems with the trial described in the press release from Mayo Clinic. For example, a full report describing the trial's results has not yet been completed and subjected to the necessary peer-review process required for publication in a reputable medical journal. Further, the trial was only four weeks in length, probably too short to

measure any effect from the product tested, since most clinical trials on black cohosh have run for three to six months. (The trial had a cross-over design, i.e., women took black cohosh or a placebo for four weeks, and then switched for another four weeks, after a brief "washout period." Thus, the amount of time any group of women experienced the herb was four weeks, generally acknowledged by most black cohosh experts as being too short a period to produce a measurably beneficial effect.) Another area of potential ambiguity in this trial is the black cohosh product employed. The researchers attempted to produce a replica of Remifemin<sup>®</sup>, the German black cohosh product with the most clinical research, according to an email from Barbara Pockaj, MD, the principal investigator in the trial. Dr. Pockaj said that a smaller pilot trial that she conducted previously showed positive results when she used Remifemin but she was unable to obtain this product from its manufacturer for the larger trial now being reported. Consequently, she and her colleagues chose to try to produce a duplicate product. It is not clear to what extent the researchers were actually successful in replicating an exact match of Remifemin.

As the world's leading black cohosh product, Remifemin has been shown effective in numerous clinical trials, including a larger and longer trial just published.<sup>2</sup> This trial concluded that Remifemin was effective in relieving menopausal symptoms. The randomized, multicenter, double-blind, placebo-controlled trial on 304

## PROFESSIONAL MEMBERSHIP

1. Phytochemical Society of Europe, UK
2. New York Academy of Science, USA
3. International Society of Ethno pharmacology, USA.
4. Indian Pharmaceutical Association.
5. Pharmacists Association (W.B.).
6. Indian Hospital Pharmacists Association.
7. Indian Science Congress Association
8. Ethnobotanists' Society of India.
9. Herbal's Academy of India.
10. Association of Pharmacy Teachers of India [APTI].
11. Indian Society of Pharmacognosy.
12. Drug Information Association, USA

menopausal women demonstrated that 40 mg of the German black cohosh preparation produced clinically significant benefits, particularly in women in early stages of menopause, with no significant adverse effects. "Most of the clinical trials published to date on black cohosh have demonstrated positive results in helping to treat various symptoms of menopause," said Mark Blumenthal, founder and executive director of ABC. "The evidence supporting the benefits and relative safety of this traditional herb is becoming increasingly clear." Menopausal symptoms include the well-known hot flashes (sometimes called hot flushes), as well as night-time perspiration, vaginal dryness, and mood swings. According to ABC, several European black cohosh preparations have been shown to be effective in alleviating these conditions.

At least 14 clinical trials on black cohosh preparations support their safety and efficacy in treating menopause-related symptoms, including hot flashes, perspiration and mood swings, according to Gail Mahady, PhD, Assistant Professor of Pharmacy Practice at the University of Illinois at Chicago, who has reviewed most of the research on black cohosh for a monograph for the World Health Organization. Most of these published trials are based on the two leading black cohosh products: Remifemin<sup>®</sup> (an isopropranolol extract produced by the German company Schaper and Brümmer, and imported to U.S. by GlaxoSmithKline) and Klimadynon<sup>®</sup>, (a hydro-ethanolic [water and grain alcohol] extract produced by the

German company Bionorica and imported by Bionorica USA). Black cohosh, also known by either its scientific names (*Actaea racemosa* and *Cimicifuga racemosa*) is a member of the buttercup family (Ranunculaceae) native to the Eastern United States. The roots and rhizomes (lateral roots) of the herb have a long history of use by native-American tribes to deal with genitourinary complaints in women. An extract of black cohosh has been used in German clinical practice since the mid-1950s with safe and effective results, and black cohosh preparations have been approved by the German government as nonprescription medications for treatment of menopausal symptoms. Black cohosh has become increasingly popular as the most widely-used natural alternative to hormone replacement therapy (HRT). The herb's popularity with middle-aged women and gynecologists grew significantly after the summer of 2003 when a large-scale government-sponsored clinical trial on HRT was

halted prematurely after evidence that HRT was responsible for an increase in cancer and cardiovascular disease in menopausal women.

Black cohosh preparations ranked eighth of all herbal supplements sold in mainstream retail outlets in 2004, according to data from Information Resources in Chicago as reported in the current issue of *HerbalGram*, ABC's quarterly journal. Total retail sales of black cohosh in all channels of trade are difficult to estimate, but may be as high as \$76 million in 2003, a jump of about 28% in sales from the previous year, according to *Nutrition Business Journal*.

**About the American Botanical Council**  
Established in 1988, the American Botanical Council (ABC) is the leading nonprofit, member-based international organization working to educate consumers, healthcare professionals, researchers, educators, industry, and the media on the safe and effective use of herbs and medicinal plant products. ABC is located on a 2.5 acre site in

Austin, Texas where it publishes *HerbalGram*, a peer-reviewed quarterly journal. ABC is also the publisher of *The ABC Clinical Guide to Herbs*, a continuing education module and reference book, which contains extensive monographs on the safety and efficacy of 29 popular herbs, including black cohosh. More information is available at:  
<http://www.herbalgram.org/>

#### References

- Mayo Clinic Researchers Report on Effectiveness of Treatments for Hot Flashes [press release]. Scottsdale, AZ: Mayo Clinic; May 15, 2005.
- Osmer R, Friede M, Liske E, Schnitker J, Freudenstein J, Henneicke-von Zepelin H-H. Efficacy and Safety of Isopropanolic Black Cohosh Extract for Climacteric Symptoms. *Obstet Gynecol* 2005;105:1074-83.