



Exploring the Emerging Thrust towards Research in Ayurveda in West Bengal

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Abstract: The present paper discusses the development in the area of research conducted on Ayurveda in West Bengal at three institutional levels - University of Calcutta , Jadavpur University and Kalyani University. The paper will also bring under its purview the research under the State Ayurvedic colleges. The study reveals the growing orientation of Ayurveda towards scientific dimensions through the academic institutions and the research and development wing that enable Ayurveda to explore its thrust towards scientism.

Key words: Research, Scientism, Academic institutions, Indigenous, Medicinal plants.

The post-independent era witnessed specific development in the area of research in Ayurveda. The early decade of the twentieth century witnessed the process of adaptation of western science that received full attention from a host of scientists primarily working on Ayurvedic Pharmacopoeia. This line of action enabled R.N.Chopra, K.M.Nadkarni, C.P.Khare, S.K.Jain to research and document medicinal plants. Research in any subject indicates an understanding of the subject thoroughly and also is a marker in the process of development in that particular field. The compilation of their works, their prefatory, introductions revealed the process through which scientific Ayurveda emerged. Since Ayurveda has both theoretical and a practical approach, it is necessary to combine these aspects together to give a proper shape to what Ayurveda really stands for. Hence the research methodology applied in this paper has been to identify and accumulate the researches carried in the field of pharmacology, clinical therapeutics of Ayurvedic medicinal plants and to corroborate the findings of the impact of medicinal plants scientifically as mentioned in the Pharmacopoeia. This action of research has been carried out in the chemistry, botany departments of the Calcutta, Kalyani, Jadavpur University which has been brought forward in this paper. These research are indicative of a shifting trend towards scientific orientation in Ayurveda.



Some valuable scholarly work situate Ayurveda within the context of scientific traditional medical practice. Scholars have contributed to the understanding of the different phases of Ayurveda as a body of knowledge and practice and the scope of its performance. Scholars like Pratik Chakrabarti (Chakrabarti, 2010) believed that the new orientation towards scientism in the field of Ayurveda was not the outcome of the revivalist- nationalist trend as observed by Brahmananda Gupta, (Gupta, 1976) Charles Leslie, (Leslie, 1976) Deepak Kumar (Kumar, 1997). In fact it was the process of rationalisation and adoption of the Western scientific practice of collection, observation, experimentation and analysis and also the use of laboratories by the indigenous medical system that the ‘bridge for passing’ has been the main notion behind scientism as pointed out by Nupur Dasgupta (Dasgupta, 2014)

It is observed that after independence research on indigenous medicinal plants have increased to a greater extent which not only confirmed their medicinal properties but also the diseases that can be treated. In this aspect, several works were done on indigenous plants by B.D Basu and Kirtikar, Col. R.N. Chopra. (Chopra, 1958). Apart from them, K.M. Nadkarni and C.P. Khare needs special mention. But these works were basically in the nature of compilation of numerous medicinal plants without much clinical trials (Khare, 2007). In 1966 trials were conducted clinically as evident from the published clinical experimentations in Ayurved Vigyan Patrika. (Ghosh, 1964, Chandra, 1964). Later the Research unit of J.B. Roy State Ayurvedic Medical College and Hospital, funded by the DST of West Bengal, in collaboration with other institutions is investigating how the use of some specific medicinal plants (*Ocimum Sanctum*, *Centella Asiatica*), of which there has been no evidence-based clinical report, has reacted on the patients suffering from Generalised Anxiety Disorder. The research wing claims that these trials reported statistically significant results of the patients undergoing stressful conditions after treatment. It is therefore derived that Ayurveda is progressing on scientific lines and oriented towards practical application of a new kind of treatment methodology. None of the Ayurvedic institutes allow clinical trials of Ayurvedic medicines produced by private manufacturers. In fact, the hospices separately conduct their own research on medicinal plants which they implement on the treatment of their own patients. It is also observed that research on herbal pharmacology has been conducted at a greater scale by academic institutions like University of Calcutta, Jadavpur University and University of Kalyani. The focal area of



our study constitutes the context of research in herbal and especially Ayurvedic pharmaceuticals conducted in the various departments of these Universities in order to understand the development in this field and to derive a clear understanding of the arena of scientism in Ayurveda.

The departments in the University of Calcutta which dealt with research on drug development from natural products are the Departments of Chemistry, Botany and Biochemistry. It is not that these departments were researching on the basis of disseminating traditional knowledge, but laboratory based researches were being carried out on herbal medicinal plants for drug development which most often relate to Ayurvedic herbs.

In the University of Calcutta, the Chemistry department was set up in 1916. Between 1950s -70s Professor Asima Chatterjee carried out investigations particularly on alkaloids and coumarins obtained from the indigenous plants (Pakrashi, 2007). Through her untiring efforts, she established the Regional Research Institute with the intention and determination that much is left to be done in the field of medicinal plants. She aimed at the development of Ayurvedic drugs and for the fulfilment of her purpose she realized that systematic trials in the clinics, particularly in the Ayurvedic hospitals, was a necessity. Her epoch-making discovery of the drug to combat epilepsy, namely, Ayush-46 and also the anti-malarial drug enabled her to obtain the patent rights of these drugs which have been marketed by numerous companies. (Pakrashi, 2007). From 1949 to 1970 a series of her publications related to plant medicine has been published in very renowned journals. Some of them were indicative of those plants used in preparation of herbal medicines have been discussed in her publications on '*The active principles of the leaves of Aegle marmelos*' and '*Rauwolfia* alkaloids. (Asima Chatterjee- *The Chemist, The Valentina project*, n.d) Owing to the contributions on research, the University Grants Commission selected the Department of Chemistry to operate a Special Assistance Program on Natural Products where Asima Chatterjee was appointed the Honorary Coordinator of the Program in 1972. She joined the University College of Science of the University of Calcutta in 1954 and in 1962 was appointed the Khaira Professorship of Chemistry in the University of Calcutta, a position she held till 1982. Her research centred round several branches of chemistry- natural based and synthetic based. These experiments led to the discovery of drugs to fight against convulsion, malaria and very importantly drugs required for chemotherapy. Chatterjee has also edited and rewritten '*Bharater Vanaushadhi*', or



the Medicinal Plants found in the Indian sub-continent. The treatise was written in Bengali, consisting of six volumes, but it was originally compiled by Late Dr.K.P.Biswas, which was later collected and compiled by Dr. Chatterjee. In recent years she devoted her time to drug development (alternative medicine) from natural sources. Chatterjee patented several herbal drugs including the antiepileptic drug Ayush-56 (Indian Patent No.141170 dated 4th July, 1976); and the anti-malarial, Ayush-64, a combination of four herbs (Indian Patent No.568/ Del.70, 7th August 1979). These were patented under the Central Council of Research in Ayurveda and Siddha (CCRAS), Union Ministry of Health, Government of India (*Asima Chatterjee, University of Michigan, n.d*). The discoveries of these two combination drugs are landmarks in developing “alternative lines of treatment” leaving no side effects. Apart from this, the University of Calcutta’s Botany and Biochemistry departments made important and enormous contributions in the research area related to medicinal plants. (*Medicinal Plants- Insa India, n.d*)

A focus on the year wise thrust area on herbal medicinal plants by the departments of Botany, Chemistry, Biochemistry of the three Universities and the School of Natural Product Studies from 1970-2011 shows a varied work done on this area. In the area of research, it is seen that the Botany department of the University of Calcutta has conducted thirteen individual researches from 1980 onwards on plants. Of these, two researches are directly connected to Ayurveda which discusses about the medicinal properties and its evaluation of *Cassia fistula* (1997) and that of *Shankhpushpi* for enhancing memory function. (*Department of Botany- University of Calcutta,- Website, n.d*) The Home Science department of the University has conducted six researches over the years under study where five researches deals with the medicinal plant *Ocimum sanctum* on female albino rats (2003, 2004, 2005, 2006). (*Department of Home Science- University of Calcutta-Website, n.d*) The School of Natural Product Studies, Jadavpur University, conducted thirty-nine researches on plants having medicinal properties along with their medicinal properties for curing several diseases as discussed below. The medicinal plants taken into consideration included *Moringa oleifera* leaf for the study on anti-ulcer activity (1995), *Nelumbo nucifera* rhizome extract to study anti-diarrhoeal evaluation (1995), Anti-inflammatory evaluation of *Leucas lavandulaefolia* Rees extract (1996). Other medicinal plants researched were *Drymaria cordata* willd, piper betle, *cassia fistula* leaf extract, *ficus racemosa* leaf extract, *morinda tinctoria* roxb



aqueous leaf extract (2009) to evaluate their medicinal and therapeutic properties. Experimentation is also done with certain Ayurvedic medicines like Triphala-A (2008), *Clitoria ternatea*(2008) to scientifically assess its traditional use and evaluation of garlic as an antioxidant (2003), bioactive compounds from natural resources against skin-ageing (2011) are researched.(Central Library Data base Jadavpur University, 2016). The University of Kalyani offers nine researches conducted on indigenous plants having medicinal attributes. Of these, three belong to the Chemistry department, five to the Botany department and one to Molecular Biology and Biotechnology. Of those, study of *Hypericum hookerianum* leaf and stem and its wound healing effects (2000) seems to be directly related to traditional medicine. (Central Library Database Ph.D. thesis, Kalyani University, 2016).

Apart from these, Major Research Project works are funded and sponsored by different educational and scientific organizations, dealing with herbal plants by these three Universities. The Research Projects of the above mentioned departments discussed on medicinal plants is given below.

The Department of Biochemistry of University of Calcutta completed the following projects:

1. “Exploring the Possibility of Herbal Extract (*Phyllanthus fraternus* L) as a therapeutic supplement to Phototherapy in Neonatal Jaundice”, sponsored by BRNS, DAE, Government of India, for a period of three years.
2. “Effect of Theaflavin a Black Tea Extract on Ovarian Cancer”, sponsored by R.D.Birla Smarok Kosh.
3. “Safety and efficacy study of Oxitard capsules in management of chronic fatigue and stress with special emphasis to critical care patients”, sponsored by Himalaya Drug Company.
4. “Evaluation of Efficacy and Safety of Polyherbal Formulation- as an Antioxidant in geriatric patients”, sponsored by Himalaya Drug Company.
5. “To investigate the Effect of Plant Extract as Antioxidant Agent in Experimentally Induced Jaundice Treated with Phytotherapy”, sponsored by University Grants Commission, Minor Research Project.
6. “Development of New Nutraceutical Product for Nootropic and Anti-stress agent from indigenous black beverage Black Tea (*Camellia sinensis*)- A Pharmaco- Clinical Study”,



sponsored by National Tea Research Foundation. (*Santasree Mazumdar, University of Calcutta, Website, n.d*)

The Department of Chemistry of University of Calcutta completed the following projects under different funding agencies.

1. “Design, Synthesis and Development of Non-steroidal Contraceptive agents”, sponsored by AICTE Research Promotion Scheme.
2. “Investigation on Antifertility Agents from Indigenous Medicinal Herbs and Pharmacophore Search of Chemical Compositions' ', sponsored by University Grants Commission, Major Research Project.
3. “Investigation on Contraceptives from indigenous medicinal plants and pharmacophore search for novel contraceptives- Part-2” sponsored by University Potential of Excellence (UPE) Scheme Research Project.(*Department of Chemistry, University of Calcutta- Website n.d*)

The School of Natural Product Studies (SNPS), Jadavpur University completed the following projects:

1. “Search for Acetyl cholinesterase inhibitors from Indian Medicinal Plants”, funding agency DST-SERC, Government of India, New Delhi.
2. “Evaluation of safety profile of herbs used in Ayurveda with CYP-450 enzymes inhibition method”, funding agency CCRAS, Govt. of India, New Delhi.
3. Anti- ageing and anti-wrinkle formulation with Matrix Metalloproteinase Inhibitory Activity from Natural Resources”, funding agency DST-DPRP, Govt. of India, New Delhi. (*Project work, Jadavpur University Website, n.d*)

On the other hand, the Pharmacy department of Jadavpur University was inaugurated in 1960. It included in its curricula, notions and developments of manufacturing and formulations of modern medicine. The curricula included basic studies on plant medicine with no specialisation on preparation of herbal formulations. However, with change in time and space, the gradual development of Ayurveda was gaining ground. The School of Natural Product Studies (SNPS) of the Jadavpur University, on the other hand, also made considerable contributions in the research



area dealing on traditional medicine inspired drug discovery leading to development of therapeutic leads from natural resources (*Project Work, Jadavpur University Website n.d*). The research aimed at investigating natural product research. Its main purpose was to relate herbal medicine and allied approaches together. In doing so they kept special attention to their quality, safety, efficacy so that scientifically validated natural product development can be carried forward. (*Jadavpur University-Website,n.d*). It also aims at disseminating knowledge and development of natural products and aims at coordination and collaboration at the international front. The School aspires for globalising local knowledge and localizing global techniques in the area of traditional medicine for a more advanced and qualitative development (*Jadavpur University- Website,n.d*.)

Many collaborative programs have been undertaken under the School of Natural Product Studies, Jadavpur University with foreign research institutions which indicate a trend towards scientific study in natural medicine. In 2002, it collaborated with Leiden University, The Netherlands for the programme ‘Metabolomics Study of Natural Products’. In 2006, Pure Lotus Partners, USA collaborated for ‘Development of Nutraceuticals from Natural Resources’, Indian National Drug Company Pvt Ltd. Kolkata collaborated for ‘Development of Evaluation and Anti-stress formulation’ in 2007, Dabur Research Foundation Ghaziabad, India, collaborated for ‘Development of Natural Products’ 2008. The collaboration ‘On pharmacovigilance study on botanicals’ was done with CDS Safety, Centralised Diagnostic Services Inc. USA, 2009. (*Collaborative Programme, Jadavpur University Website, n.d*)

It is observed that various researches carried out by the academic institutions are based on detailed study of the specific area. The study portrays that indigenous plants having medicinal characteristics have been under constant study from 1960,s onwards. This approach has enabled the development of the research wing to carry out lab-testing of the herbal plants to examine their medicinal quality. It has also opened new areas and avenues of medicinal expertise that are evolving in treating various diseases as a result of these qualitative and quantitative experiments.. More such research should be promoted and carried out for further development and progress in the medical field.



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