Short Communication

Needs of Creation of Apex Body for Taxonomy of Medicinal and Aromatic Plants and its Efficacy

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It is estimated that around 2,50,000 flowering plant species are reported to occur globally. Approximately half (1,25,000 the diversity is much more in tropics?) of these are found in the tropical forests. They continue to provide natural product chemists with invaluable compounds for development of new drugs. The potential for finding new compound is enormous as till date only about 1% of tropical species have been studied for their pharmaceutical potential. The success of drug discovery from plants resulted principally in the development of anti-cancer and anti-bacterial agents. The success of anti-cancer drug development can be illustrated from the efforts of the National Cancer Institute (NCI), USA.

In the effort, field explorations are largely guided by the so-called biodiversity or 'random' collection approach, with ethno botanical or ethno pharmacological information playing a minimal or no role. NCI launched its effort in1955 and for the period 1960-82, about 1,14,000 extracts from an estimated 35,000 plant samples (representing 12000-13,000 species) collected mostly from temperate regions of the world had been screened against a number of tumour system [1]. A wide variety of compound classes were isolated and characterized. Clinically significant cancer chemotherapeutic agents that emerged from this programme included paclitaxel (*Taxus brevifolia* Nutt. and other *Taxus* sp., Taxaceae), hycamptamine (topotecan), CPT-11 and 9-aminocamptothecin.

The latter three compounds are semi-synthetic derivatives of camptothecin (*Camptotheca acuminata* Decne., Nyssaceae) [2]. The programme was extended from 1986 to 2004, with an emphasis on global plant collections and screening against tumour cell cultures. Drug discovery from plants has evolved to include numerous interdisciplinary fields and various methods of analysis. The process typically begins with a botanist, ethnobotanist, ethno pharmacologist, or plant ecologist who collects and identifies the plant of interest.

Collection may involve species with known biological activity for which active compound(s) have not been isolated or may involve taxa collected randomly for a large screening programme. It is necessary to respect the intellectual property rights of a given country where plant of interest are collected [4].

This resulted into some promising leads that were later developed as drugs, viz. bacoside, and the memory enhancer from *Bacopa monnieri* (L.) Penn.; picroliv, the hepatoprotective from Picrorhiza kurroa Benth., curcumin, the anti-inflammatory from *Sapindus mukorossi* Gaertn., etc. Other CSIR laboratories and some private pharmaceutical companies have also made some efforts in this direction may take several decades. Plants have been the basis of many traditional medicine systems throughout the world for thousands of years and continue to provide mankind with new remedies. Plant-based medicines initially dispensed in the form of crude drugs such as tinctures, teas, poultices, Powder, and other herbal formulations, now serve as the basis of novel drug discovery. The process of drug discovery is multi- and inter- disciplinary. Apart from the core disciplines related to pharmaceutical research, classical sciences like taxonomy and the newer discipline ethno botany have now become an integral part of drug discovery of plants.

The plant-based indigenous knowledge was passed down from generation to generation in various parts of the world throughout its history and his significantly contributed to the development of different traditional system of medicine. The use of plants as medicines has involved the isolation of active compounds beginning with the isolation of morphine from opium in the early 19th century and subsequently led to the isolation of early drugs such as cocaine, codeine, and quinine, of which some are still in use [3,4]. Isolation and characterization of pharmacologically active compounds from medicinal plants continue today.

More recently, drug discovery techniques have been applied to the standardization of herbal medicines to elucidate analytical marker compounds. The reason could be the availability of source plant material, expertise to authenticate the taxa, developing enough suitable in vitro screens for all indications, reproducibility of results and so on. Whatever the case may be, can we afford to wait any longer to evaluate our flora for its medicinal efficacy? In spite of its importance as an inevitable field of all types of research, taxonomy faces many challenges and remains a neglected subject.

There is no national repository centre, museum, or maintenance of taxonomic collections (Are you aware of herbaria in India? Do you know National Repositories recognised by National Biodiversity Authority under Biodiversity Act 2002? Have heard of National Repositry of Medicinal Plants and crude Drugs?). Many museums have no curators and several universities have no faculty positions for taxonomists (See project on Capacity Building in Taxonomy in Idia under MOEFCC, Govt of India?). A demand for taxonomy is on the rise in the wake of the global biodiversity crisis (See Global Taxonomic Intiative? And obligations of member countries of CBD). There is a need to promote scientific identification and documentation requires immediate attention (Check what BSI, ZSI, NBRI, ARI are doing?). Due to lack of infrastructure at academic institutions and a well-structured research programme, seldom are students willing to purse taxonomy (See what Shivaji University, Calicut University, SK University just to name a few and under All India Coordinated project in Capacity Building in Taxonomy in India. The main problem is Job oppurtunities for Taxonomists. The authors have no knowledge on this!).

It is high time that the national Institutes and funding agencies encourage taxonomic work and provide financial assistance to strengthen the knowledge base in taxonomy (We have more than 100 trained taxonomists who have taken up jobs other than taxonomy in the last 5 years!). Observation taken by authors various international national seminars symposium as well as various events in medicinal and aromatic plants (You attend Annual Conference of Indian Association for Angiosperm Taxonomy, you will know the number of Taxonomists, Many are either jobless or working in unrelated areas), numbers of presenter taken wrong information about plant species of sample genus after that chemical and molecular characterization of the species is also doubtful.

Keeping in view of this, governments needs to established and strengthen the role of the taxonomist and ensure that the only one apex body should be authorized for identification of species, so that the gene pool will be preserve for next scientific investigations.

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