

Exploring neuropsychopharmacological potential of medicinal plants: need of the hour

Editorial

Mankind has been dependant on natural resources for many decades from now. Since time immemorial health and disease Free State or welfare, have always been one of the primary concerns of human race. Various ethnic groups have developed a wide variety of traditional procedures to maintain their wellness through utilizing natural resources surrounding them, though some of them may seem quite bizarre today, it would not be wrong to state that many of them indeed provided us encouraging 'leads' for exploring it further for prophylactic/Therapeutic usage.

W.H.O. suggests that by 2025, about three quarters of the population aged 60yrs. & older reside in developing countries, 71% Neuropsychopharmacological cases, particularly those having learning and memory problem, will be from the developing world.

Presently 4.6million new cases of such disorder are added every year. By 2040, Highest Growth projection is in Asian region, there is a high degree of prevalence of Neuropsychopharmacological disorders worldwide, and many countries have understood the seriousness of such disorders and have undertaken family history studies also. In other words the significance of Neuropsychopharmacological disorders is further compounded as the number of identified cases is estimated to double or triple by 2050. Most of the treatments available have been able to only delay the progression of the disorder, problems associated with side effect is also a concern. Plants having medicinal properties have been used since antiquity in the treatment of various disorders, including those related to Neuropsychopharmacological that includes Learning and Memory, Epilepsy, Depression, Anxiety, Behavioral disorders etc. Use of natural resources like plants is mentioned not only in Ancient Traditional Indian text of 'Ayurveda', but also in other system of Traditional Medicine like Chinese, European, Korean etc. Some of the Pharmacological treatments that are common for the Neuropsychopharmacological disorders are Senile plaque deposits and anti amyloid peptides, alpha secretase activity enhancers, Beta and Gamma Secretase inhibitors, ABeta Immunisation, Neurofibrillation tangle formation and tau inhibitors, prevention of hyperphosphorylation of tau, tau aggregation prevention, Oxidative stress and antioxidant activity, Inflammatory response and anti-inflammatory activity, Cholinergic deficit and replacement therapy of neurotransmitter, stimulation of muscarinic receptor, Inhibition of Cholinesterase activity are some of the major ones. None of the lines of treatment have far been able to stop the progression of Neurological disorders: thus there is a need of some sort of alternative approach based on medicinal plants. Natural resources have been used since quite along in various traditional systems of medicine for learning and memory disorders, Studies conducted on selected species have resulted in identification of 'leads' which are currently in clinical use or are in the process of drug discovery, one such example is Galantamine, an alkaloid isolated from *Galanthus nivalis*. Other plants exhibiting promising C.N.S. activity are *Ginkgo biloba*, *Melissa officinalis*, *Panax Ginseng*, *Salvia lavandulifolia*, *Valeriana officinalis*, *Bacopa monniera*, *Alternanthera sessilis*, *Clerodendrum infortunatum* etc. It was in traditional used for neurological conditions

Volume 4 Issue 2 - 2016

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Received: January 27, 2016 | **Published:** February 11, 2016

that helped in the process of drug development. The significance of natural products in drug discovery is quite evident from the Prescription Drug Audit analysis of previous years; approx. 35 herbal products were featuring among top 150 selling drugs. The majority of plant related drugs were obtained from ten plants species, out of which nine had been used traditionally for medicinal purpose, presently being commercially marketed. This clearly proves the interrelationship of Ethnopharmacognosy/Traditional of folk usage of medicinal plants and the current use of drugs derived from them, and thereby successfully being marketed. This approach has derived international researchers' attention, as approximately 80% of them had a traditional usage background. Some of the phytochemical that have generated renewed interest in Neuropsychopharmacology dealing with medicinal plants are Arecoline isolated from betel nut of *Areca catechu*, Asiaticosides, Bacosides derived from *Bacopa monniera*, Biphenolic lignans derived from *Magnolia officinalis*. Caffeic acid derivatives from *Salvia miltiorrhiza*, Crocin from *Crocus sativus*, Curcuminoids from *Curcuma longa*, Huperzine A from *Huperzia serrata*, Pilocarpine from genus *Pilocarpus*. Stilbenes, Galantamine, Tashinones, Withanolides and Zeatin are some of the few. Even W.H.O. has stated that one needs to explore its own country's medicinal plants/resources to become economically self dependant, Hence it would be pertinent to state that the exploration of medicinal plants have not disappointed us, till date, and therefore there is no reason to believe that they continue to serve as huge reservoirs for potential future drug development for neurological disorders. Some of the issues that are also to be kept in mind are to definitely identify relevant active compound, and understand the interactions between various factors, standardization is also a concern for reproducible results. Pharmacologically active Secondary metabolites are considered to be the products of environmental stressors, therefore proper understanding of varied ecological roles such as herbivore attack, salinity, UV light, microbes would serve as an added advantage.

Acknowledgements

None.

Conflict of interest

Author declares that there is no conflict of interest.