

**AN OVERVIEW OF ETHNOMEDICINE AND FUTURE ASPECT OF ETHNOMEDICINAL PLANTS****Arya Rishi^{1*}, Singh D.C², Tiwari R.C³, Tripathi B.M⁴**¹P.G Scholar, ²Professor, Department of Dravyaguna, Uttrakhand Ayurveda University, Rishikul Campus, Haridwar, Uttrakhand, India.³Associate Professor, Department of Agada Tantra, Uttrakhand Ayurveda University, Rishikul Campus, Haridwar, Uttrakhand, India.⁴Assistant Professor, Department of Dravyaguna, Quadra Institute of Ayurveda, Roorkee, Haridwar, Uttrakhand, India.**ABSTRACT**

Ethno botanical study is now of immense importance in the field of medical science, it is well established branch of science with much attention. Ethno botany is the scientific relationships that exist between people and plants. Traditional medicine and ethno botanical information play an important role in scientific research, particularly when the literature and field work data have not been properly evaluated. Globally, about 80% of the traditional medicines used for primary health care are derived from plants. In China, traditional medicine accounts for around 40% of all health care delivered. In Chile 71% of the population, and in Colombia 40% of the population, have used such medicine. India is one of the twelve mega-biodiversity countries of the world having rich vegetation with a wide variety of plants with medicinal value. Rural people not only depend on wild plants as sources of food, medicine, fodder and fuel, but have also developed methods of resource management, which may be fundamental to the conservation of some of the world's important habitats. In India, 65% of the populations in rural areas are using medicinal plants to meet their primary health care needs. Here a review on ethnomedicine including correlation of Ethnomedicine and *Ayurveda* will be mentioned. Attention should be made for proper exploitation, utilization and further reasearches on ethno medicinal important plant species.

KEYWORDS: Ethno medicine, Traditional Medicine, Alternative Medicine, Medicinal Plants *Ayurveda*.**INTRODUCTION**

The science of Ethno-botany deals with the straight association between man and plants. The term ethno-botany was first coined by US botanist John William Harsh Berger in 1895 to refer the study of plants used by the aboriginals of Australia.^[1] It was refined again and again by the various workers. According to martin the term ethno-biology implies an explanation on local people perspective on cultural and scientific knowledge.^[2] It includes everything from interaction and interrelation of human communities with plants.

India has an ancient heritage of traditional medicine and it is greatly acknowledged to the people of India that they were acquainted with a far larger number of medicinal plants than the native of any other country on the face of the earth. The Materia Medica of India provides a great deal of information on the folklore practices and traditional aspects of therapeutically important natural products. Indian traditional medicine is based on various systems including *Ayurveda*, *Unani*, *Siddha* etc.^[3] Acharya Charaka, Acharya Sushruta and Dhanwantri Nighantu also stated that the Cowherds, Shepherds, Hermits, Ethnic communities and who are residing in close proximity of forest are best conversant persons to recognize and utilize plants.^[4-6]

Ethnomedicine, Traditional Medicine and Alternative Medicine

Ethno medicine refers to the study of traditional medical practice which is concerned with the cultural

interpretation of health, disease and illness & also addresses the healthcare seeking process and healing practices. The practice of ethno-medicine is a complex multi-disciplinary system constituting the use of plants as primary health care for the people since millennia.^[7]

Traditional medicine is the sum of total knowledge, skills, practice based on theories, beliefs and experiences indigenous to different cultures that are used to maintain health, as well as to prevent, diagnose, improve or treat physical and mental illness.

A traditional medicine that has been adopted by other population (outside its indigenous culture) is often termed as alternative or complementary medicine.^[8]

According to data released by W.H.O, ethno-medicine is popular in all regions of the developing countries, e.g. In China traditional herbal account 30-50% of the total medicinal consumptions. In Ghana, Mali, Nigeria and Zambia, the first line of treatment for 60% of children suffering from malaria is use of herbal medicine. In San Francisco, London and South Africa 70% of people suffering with HIV/AIDS use traditional medicine.^[9]

Some outstanding medicinal drugs which have been developed from the ethno medicinal uses of plants include Vinblastin and Vincristine from *Catharanthus roseus*(L) G.Don used for treating acute lymphoma & acute leukemia, Aspirin from *Salix purpurea* L. used for treating inflammation, pain and thrombosis, Quinine from *Cinchona officinalis* L. and Artether from *Artemisia annua* L. used for

treating malaria, Taxol from *Taxus baccata* L. used for treating uterine carcinoma.^[10]

Plants as Food and Medicine with Emergence of Homo Sapiens

The association of man with plant can probably be traced as far back as the early middle period of the 'Pleistocene Epoch' (2.3 million years ago) when the emergence of man in the world took place in the form of 'Ape' man. Climatic conditions during this period required a diet heavy in animal protein so they were sophisticated hunters, although a recent discovery indicates they also cooked and ate plant materials. Also vegetation during this period was fairly limited in many areas. There were some scattered conifers including pines, cypress and yews along with some broadleaf trees. On the ground there were prairie grasses as well as members of the lily, orchid, and rose family.^[11] But recorded history of man-plant relationship of that period can never be expected in 'India' it may be possibly gathered from the time of *Rigveda*. In *Manu-Smriti* it is stated that the plants have consciousness and they are sensitive to pain and touch. It shows awareness about the importance of plants and forest in maintaining the appropriate environmental conditions for the balanced growth and development of the living world, they declared that the plants are sacred in origin, and named the many plants as the 'Abodes of God'.

Veda's and Ethnomedicine

The use of plant and animals as a source of medicine and food is as old as humanity and herbal occupied a distinct place in life right from primitive period to today. The primitive man must have used those things which he was able to procure most easily as therapeutic agents and remedial measures. *Rigveda* which is also called as oldest drug stock of *Ayurveda* deals with few number of drugs. The number of drugs increased gradually due to addition in knowledge by advancement of time and that is why the number of drugs in *Atharvaveda* is quite larger than in *Rigveda*. The 'Vedic Aryans' were acquainted with use of about hundred medicinal plants. When a king appoints a Purohita, he repeats a prayer in which he entreats that all the herbs over which King Soma rules will grant him uninterrupted happiness. The word '*Ausadhi*' literally means heat producer. When the Indo-Aryans came to use the plant 'Soma' for therapeutic purposes, they came to possess knowledge of the medicinal properties and uses of herbs. Hence '*Ausadhi*' applied to all the herbs and medicinal plants. It is obvious from the *Rigveda* and other Vedic works that 'Aryans' were vigilant spectator of plants. They started studying the flora wholeheartedly with the purpose of finding out the proper utility of plants. Literary trends show that a disciplined exploration of plants by the 'Aryans' commenced near about 1800 B.C. steadily the wealth of the floral knowledge increased, and the same was systemized.

Ethnomedicine in Samhitas Granthas

From the works of Acharya Charaka and Acharya Sushruta we learn that the Indo-Aryans were acquainted with a large number of medicinal plants. The Charaka and Sushruta Treatise had recorded the properties of large number of medicinal plants; but all of these are not indigenous to India. Some foreign drugs were imported

into this country. In ancient times there was a trade in drugs between the India and other nations. Liquorice, which does not grow in this country, was extensively used in Indian medicine. It grows in Asia Minor and Central Asia, and was brought to this country by the nomadic tribes of central Asia. It is mentioned in Charaka and Susruta Treatise. The majority, however, of the medicinal plants in these works were indigenous to this country. Their properties were known to Indian by empirical means. Information regarding them was gathered from hunters and shepherds. For this purpose, physicians were enjoined to penetrate forests and climb mountains.^[12]

W.H.O's Strategy

Traditional medicine is practiced in virtually in all countries of South-East Asia region, even in smaller countries such as Bhutan and Maldives. The science and the art of traditional medicine had been practiced through ages. Traditional medicine practitioners in the region have provided valuable health care and have evolved with time. The recently published W.H.O traditional medicine strategy has addressed these issues and provides a comprehensive framework for countries to develop their traditional medicine sector. The strategy advocates the formulation of a policy by the state as the first component of developing such a policy and it is a logical and welcome outcome of the centuries of traditional medicine in the country.^[13]

According to a survey conducted by W.H.O, uses of medicinal plant remedies are on the rise even in developed countries, especially among the young generation. Modern researches are proceeding to borne out the efficacy of many of the crude plant drugs used by the aborigines. The history of discovery during the past fifty years in succession of plant derived "wonder drugs" with rich ethno pharmaceutical attributes known from the tribal aboriginal societies substantiates this observation.

W.H.O has anticipated that 80% of the people in the world rely on traditional medicine including ethno medicine for primary health care need. In the last decade W.H.O's health assembly passes resolutions in response to such resurgence of interest in the study and use of traditional medicine in health care, particularly in the primary health care needs of third world countries. China is one of the countries in the world who has demonstrated the best use of traditional medicine providing the best health care to their people with 882 herbal drugs in use.

Natural yield happen to gradually more important as a resource of pharmacy therapeutics, either directly e.g. in the application of herbal drugs for the management of chronic diseases, or as raw material from which more or less complex chemical structures with particular biological activity are isolated. It has been accomplished from studies that for ailments more than 60% of new standard drugs are derived from innate sources.^[14]

Medicinal Plants in Different System of Medicine

Total number of drugs delineated in the ancient Indian medical text is highly controversial. Different authors provided different numbers. According to Acharya Priya Vrata Sharma the number of drugs delineated in *Rigveda*, *Yajurveda* and *Atharvaveda* are about 67, 81, and 289 respectively. This increase in the number of medicinal

plants indicates the development in the utility of herbs during Vedic period.

The *Amarakosha*, an excellent vocabulary of Sanskrit language, contains in one chapter the names of about 300 medicinal vegetables, The *Medini Kosha* may comprise many more and The *Dravyabhidhana* or Dictionary of natural productions includes, a far greater number, properties of which are distinctly related in medical tracts of approved authority."

In the preface, on his work 'Glossary of Vegetable drugs in *Brihat Trayee*' Thakur Balwant Singh discussed regarding the number of medicinal plants in the Treatise. As regards the total number of drug plants mentioned in three Treatise, it appears, on a rough estimate, that it lies somewhere between six and seven hundred or it may be about 600 if the unidentified food grains, divine drugs and vegetable poisons are excluded including, of course, the food-cum-drug plants and some of the drastic poisons accepted for use after some treatment.

Total number of Sanskrit names (Basonyms) excluding their derivatives are about 1900 out of which, on

a rough counting, about 670 are common to all three text and about 240, 370 and 240 have been exclusively mentioned only in Charaka Treatise, Sushruta Treatise, Astang Hridaya respectively. Thus the total number of Sanskrit names (Basonyms) are about 1270, 1100, 1150 in Charaka Treatise, Sushruta Treatise, Astang Hridaya respectively. Their numerical superiority in Shusruta Treatise indicates that a much larger number of plants were known and used by Acharya Shusruta. While that in Astang Hridaya and Charaka Treatise may be explained by the fact that Acharya Vagbhata borrowed freely from both to make his treatise more comprehensive and practical, although with the same object in view he dropped most of the divine drug plants and the vegetable poisons from his per view.

From the published literature, the FRLHT (Foundation for Revitalization of Local Health Tradition) database gives a lower estimate of 7195 species of medicinal plants. The following, is the information on no of medicinal plants in different systems of medicine:

System	Ayurveda	Folk	Homoeo	Modern	Siddha	Tibetan	Unani
Ayurveda	1773	731	164	55	743	271	653
Folk	731	4720	147	56	636	201	486
Homoeo	164	147	296	60	142	70	455
Modern	55	56	60	105	41	17	50
Siddha	743	636	142	41	1122	227	486
Tibetan	271	201	70	17	227	280	224
Unani	653	486	155	50	486	224	751

The family and genera analysis of 7195 medicinal plants shows that 387 families and 2220 genera have ethno medicinal properties. Some of the major families are Asteraceae (424 species), Euphorbiaceae (219 species), Lamiaceae (218 species), Fabaceae (217 species), Rubiaceae (210 species), Poaceae (169 species), Papilionoaceae (167 species), Acanthaceae (143 species), Rosaceae (130 species), Apiaceae (118 species).^[15]

Future Aspect of Ethnomedicinal Plants

During the past century there has been a rapid extension of the allopathic system of medical treatment in India. It generated commercial demand for pharmacopeia drugs and their products in India. Efforts have been made to introduce many of these drugs plants to farmers. Several research institutes have undertaken studies on the cultivation practices of medicinal plants, which were found suitable and remunerative for commercial cultivation. The agronomic practices for growing Poppy, Isabgol, Senna, Cinchona, Ipecac, Belladonna, Ergot, and few others have been developed and there is now localized cultivation of these plants commercially.

Medicinal plant also have curative properties due to the presence of various complex chemical substances of different composition, which are found as secondary plant metabolites in one or more parts of these plants. These plant metabolites, according to their composition, are grouped as alkaloids, glycosides, steroids, essential oils, etc. The alkaloids form the largest group includes Morphine and Codeine (Poppy), Strychnine and Brucine

(Nux vomica), Quinine (Cinchona), Ergotamine (Ergot), Hypoxamine (Belladonna), Scopolamine (Datura), Emetine (Ipecac), Cocaine (Coco), Ephedrine (Ephedra), Reserpine (Rauwolfia), Caffeine (Tea dust), Aconitine (Aconite), Vasicine (Vasaca), Santonin (Artemisia), Lobelin (Lobelia) and a large number of others. Glycosides form another important group represented by Digoxin (Fox glove), Stropanthin (Stropanthus), Glycyrrhizin (Liquorice), Barbolin (Aloe), Sannocides (Senna), etc. Steroids have come into prominence recently and Diosgenin (Dioscorea), Solasodin (Solanum sp.) etc. are now command a large world demand. Some essential oils such as those of Valerian root oil and Peppermint also possess medicating properties and are used in the pharmaceutical industry. However, it should be stated in all fairness that our knowledge of the genetic and physiological make-up of most of the medicinal plants is poor and we know still less about the biosynthetic pathways leading to the formation of active constituents for which these crops are valued.

The pharmaceutical industries have made massive investment on pharmacological, clinical and chemical researches all over the world in past five decades. Efforts have been made to discover still more potent plant drugs. In fact, a few new drug plants have successfully been passed the test of commercial screening. The benefits of these efforts would reach to the masses in future, if farmers initiate commercial cultivation of medicinal plants. In fact, agricultural studies on medicinal plants, by its nature, demand an equally large investment and higher

priority. India, in particular, has a big scope for the development of pharmaceutical industries.^[16]

Realizing the importance of plant based chemicals, it has been a vigorous field of research, especially to the western scientist. Thousands of plants have been screened for their active ingredients, supposed to be effective against certain diseases claimed in the traditional system. Use of traditional knowledge increased the efficiency of screening plants for medicinal properties. However, the aim of such researches is not to validate traditional system of medicine but to hit the jackpot by converting the results for commercial benefits. As a result, traditional knowledge of several indigenous plant species of India has been pirated, through the patent issued under western patent regime.

At present there is growing appreciation for the use of herbal drugs all over the world, particularly in developed countries. The recent researches claims that plant extract too have a secondary compound which acts synergistically as a bio-enhancer and at the same time reduce the risk of side effects of the drugs. Moreover, the problem of repeated failure of the single molecular drugs against certain pathogens is increasing day by day, because after some time pathogen develops resistance against these drugs. So, western scientist rather forced to look into the traditional lotion and potion, herbal extracts infusion and mixtures and so on. The results are quite encouraging, because these plant extract were able to counteract the pathogenic resistance, as it would have adapted through evolution. Thus, the single active molecule mindset of modern science is changing rapidly. It is also important to note that in USA visits of people to alternative medicinal practitioner is reported to exceed than to the primary allopathic physician and consumption of herbal drugs has been increased.

Unfortunately, increasing acceptance to herbal drugs has rendered a drastic increase in price of useful medicines and the natural occurrence of plant material is depleting fast due to their over exploitation. The rural people in India who have long been dependent on these remedies find them unaffordable when compared to synthetic medicines. On the other hand, in the wake of modernization and acculturation the communities had lost their familiarity with natural medicinal plants used by their ancestors as remedies for various ailments. Instead of this, dependency on market is increasing day by day, weather it is an allopathic drug or herbal one. The traditional physicians in villages are now visited only when all other avenues of treatment have failed. Though new *Ayurvedic* physician, know much about plants name and their therapeutic uses, but can hardly recognize the plant material, they prefer to prescribe costly branded medicines, which are often not up to the mark in their efficacy, since poor substitutes are used in drug formation.

CONCLUSION

In ancient days the villagers had good knowledge of healthy life style and dietetics in different seasons. The grandmothers/fathers were passing this knowledge from generation to generation. To make *Ayurveda* more acceptable in various parts of the world, enrichment of this science by philosophical and spiritual dimensions of the related region will also be supportive. Recent

advancement in science and technology cannot be ignored and there is a need to utilize this knowledge to enrich the ancient science of life i.e. *Ayurveda* which can be supported by the available scientific parameters.

World is enriched with a rich wealth of medicinal plants. Herbs have always been the principle form of medicine in India and presently they are becoming popular throughout the world, as people strive to stay healthy in the face of chronic stress and pollution, and to treat illness with medicines that work in concert with the body's own defenses. People in Europe, North America and Australia are consulting trained herbal professionals and are using the plant medicines. Medicinal plants also play an important role in the lives of people, particularly in remote parts of developing countries with few health facilities.

Since the work on inventorization of the medicinal plants of India is incomplete, there is naturally a gap in our understanding of the distribution and distribution pattern of the species and therefore, a gap in our knowledge of the conservation status of the species also exist. Global trend show that many species of the plant is already facing the threat of extinction. With the present level of unconcern, we do not know if medicinal plants like *Sanjeevani* and *Brahma Suarchala* etc have been extinct today. The same may happen to drugs like *Kustha*, *Sathi*, *Daruharidra* also. It is the high time to re-identify all the botanical source of classical *Ayurvedic* herbs and conserve, preserve them for the future generations.

REFERENCES

1. Shyma TM, Devi Prasad A.G. Traditional Use of Medicinal Plants and Its Status Among the Tribes in Mananthavady of Wayanad District, Kerala. *World Research Journal of Medicinal & Aromatic Plants*. 2012; 1(2): 22-26.
2. P. Sreedevi, T.P. Ijinu, S. Anzar, A. J. Bincy, V. George, S. Rajasekharan and P. Pushpangadan. Ethnobiology, ethnobotany, ethnomedicine and traditional knowledge with special reference to India. *Annals of Phytomedicine An International Journal*. 2013; 2(2): 4-12.
3. Pulok K. Mukherjee, P. Venkatesh, S. Ponnusankar. Ethnopharmacology and integrative medicine- Let the history tell the future. *Journal of Ayurveda and Integrative Medicine*. 2010; 1(2): 100-109.
4. Pandey Kashinath, Chaturvedi Gorakhnath. *Charaka Samhita of Agnivesa (Hindi Translation)*. Part-1. Varanasi; Chaukhamba Bharati Academy; 2005. p.47.
5. Shastri Ambika Datta. *Sushruta Samhita of Maharsi Susruta (Hindi Translation)*. Part-1. Varanasi; Chaukhambha Sanskrit Sansthan; 2009. p.181.
6. Sharma P.V, Sharma Guruprasada. *Dhanvantari Nighantu*. Varanasi; Chaukhambha Orientalia; 2012. p.3.
7. V. Amuthavalluvan. Ethno medicinal practices and traditional healing system of Kattunayakan in Tamilnadu: An anthropological study. *International Multidisciplinary Research Journal*. 2011; 1(7):47-51.
8. Traditional medicine [Homepage on Internet]. WHO Representative Office China; WPRO 2016 Available From: http://www.wpro.who.int/china/mediacentre/factsheets/traditional_medicine/en/.

9. Sharma Kumar Brijesh. Ethnomedicine: Study of Traditional Medicine. Biotech Articles. 2011-05-30-18:30-31.
10. Tiwari Ramesh Chandra. Ph.D (Ayu.) Thesis, Ethnomedicinal Plants of Chandi Devi Hills of Haridwar in Perspectives of Ayurveda. 2013; p.4.
11. Pleistocene Epoch: Facts About the Last Ice Age [Homepage on Internet]. Live science. Available From: <http://www.livescience.com/40311-pleistocene-epoch.html>.
12. Kirtikar K.R, Basu B.D. Indian Medicinal Plants. Text 1. Dehradun; International Book Distributor; 2005.p.viii-li.
13. Prajapati Narayan Das, Kumar U. Agro's Dictionary of Medicinal Plants. Jodhpur; Dr. Updesh Purohit for Agrobios (India); 2005.p.1.
14. Tiwari Ramesh Chandra. Ph.D (Ayu.) Thesis, Ethnomedicinal Plants of Chandi Devi Hills of Haridwar in Perspectives of Ayurveda. 2013; p.14.
15. Shastry J.L.N. Dravyaguna Vijnana (Fundamental Principles of Pharmacotherapeutics in Ayurveda). Vol-1. Varanasi; Chaukhambha Orientalia. 2012; p. 399-400.
16. Prajapati Narayan Das, Kumar U. Agro's Dictionary of Medicinal Plants. Jodhpur; Dr. Updesh Purohit for Agrobios (India); 2005.p.1-3.

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