

## **Ethnobotany: A strategy for conservation of plant**

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### **Abstract:**

Ethnobotany deals with the plants in relation to human and animals. The ethnobotanical studies include all type of interrelation between people and plants, with respect to their medicinal, religious, magico religious belief and uses. Now a day's ethnobotany emerges in a very complex structure which often requires collaboration of experts from various fields such as anthropology, botany, ecology, pharmacy, linguistics, medicine and ethnography. The tribal people act as storehouses of traditional knowledge which developed through continuous uses of plants in their daily life. The knowledge and belief on plant forwarded through the word of mouth, from generation after generation by the elderly people of particular tribes. As this indigenous knowledge is not documented and transfer verbally there is a chance of depletion of its integrity. Ethnobotany helps to preserve this knowledge before its complete loss. This paper focuses on ethnobotany its introduction, the problems encountered during ethnobotanical survey and steps to overcome this issue. It also focused towards the recent developed strategies for conservation of indigenous knowledge on plants used by traditional people.

**Keyword:** Ethnobotanical, indigenous, knowledge, medicinal, tribes.

### **Introduction:**

Ethnobotany is the scientific study of traditional knowledge and customs of people in relation to medicinal, religious and other uses of plant. From the ancient time the human depends on different plant for their day to day need. The plant serves the mankind by giving them food, shelter, clean water, air, medicines, shelter, apart from picking varieties of edible and herbal roots, tubers, creepers, fruits and leaves from forest [1,2,3]. Worldwide the people residing in villages and in the vicinity of forest, depends on plant and plant products for their income and livelihood as the tribes enjoys a specific right on forest and the produce [4,5]. Plants are not only a part of livelihood but also the tribal community engaged in different magico-religious practices and rituals where plants are worshipped as God and Goddess. Ethno botanical research takes in to account the relationship between plants including cultural beliefs and practices associated with various forms of use and conservation of natural environment in accordance with the knowledge practices of local communities [24, 25].

The tribes are using plants in their day to day life, as plant are a non-separable component to them. Earlier to the Indus-valley period in India, the tribal people include plants as medicines in their primary health care system. The plants like *Azadirachta indica*, *Ocimum sanctum*, *Curcuma longa*, *Emblica officinalis*, *Tamarindus indica*, *Agle marmelous*, *Artocarpus heterophyllum*, are the most commonly used almost all the tribes of India [6]. The tribes also included Triphala (*Emblica officinalis*, *Terminalia chebula*, *Terminalia belerica*) for consumption as it has various medicinal properties such as anti-aging, antibacterial, anti-cancerous, anti-anaemic, anti-diabetic, anti-diarrheal, anti-mutagenic, antioxidant, anti-parasitic, antiviral, cardio protective, hepatoprotective, hypo-cholesterolaemia, radio protective and colon cleanser [7,8]. Some herbs, shrubs and creepers are also noticed to cure various diseases apart from being a food source [9,10].

Most of the tribes and indigenous people believe that they are linked with a particular species of animal, plant, natural phenomena, etc. in the form of 'Totem'. This belief system played an important role in the socio-religious aspects. The tribal people also beliefs in performing rituals and megico religious activity not only to get a healthy and prosperous life but also to conserve the biodiversity of the surrounding. The tribes worship some plant in front of their house and in surrounding and belief it will bring prosperity to the house. Plants have also worshipped in temples, raised around temples and holy places used for household utilities, rituals, sacred and totem. Some plant also belief to have some specific power given by God, so they can drive away the evil spirit, provide good health and omen.

The plants such as *Aegle marmelos*, *Azadirachta indica*, *Bauhinia racemosa*, *Ocimum sanctum*, *Phyllanthus emblica*, etc. are involved in the megico-religious practices in particular community [11,12]. The religious, supernatural belief, folklores, taboos, etc. have significant role in tribal community. This belief contributed in the preserving the culturally important plants by preventing them from further destruction.

The plants are not only beneficial to human but also have the capacity to treat animal, such as *Acacia nilotica*, *Agle marmelous*, *Adhatoda vasica*, *Alium cepa*, *Asparagus recemosus*, *Beutia monosperma*, *Cassia fistula* are used to cure various diseaseslike arthritis, body heat, cold, colic, conjunctivitis, constipation, cough, diarrhoea, dysentery, easier delivery, fever, foots infections, hydrophobia, improve appetite, increasing lactation, indigestion, intestinal worm, jaundice, joint pain, loose motion, paralysis, physically disability, removal of ecto-parasites, rheumatism, skin burn, snake bite etc. in animals [13,14].

The tribal have a deep belief in their native traditional medicine to cure diseases as plant have some special power in them. Plants are a rich source of various chemical and bio active compound as it is synthesized in plant cells. These bioactive compounds have the capacity of healing diseases [15,16,17]. The secondary metabolites synthesized in plants like tannin, flavonoids, alkaloids, saponin, steroids etc. have antioxidant, anti-bacterial, anti-microbial properties which played an important role in prevention and cure of different diseases.

The knowledge of using plant as medicine is developed through several years of continuous practice. The tribal people are the storehouses of traditional knowledge on the multiple uses of plants. The knowledge and belief on plant passed to generation after generation by the traditional healers and locals verbally. The study of ethnobotany deals with the specific knowledge about the plants uses in relation to man and animal for various purposes that can be listed out and elaborate for further study. Important subdiscipline of ethnobotany give a detail account of plants used by humans such as ethno-taxonomy, ethnomycology, ethnoecology, ethno-medicine, ethno-toxicology.

### **Scope of ethnobotany**

The ethnobotanical study gives conservation status of plants such as endangered, vulnerable, critically endangered, susceptible, rare, invasive weeds etc. which can help to draw the conservation strategies to mitigate the loss of habitat of important species. The study also plays an important role in the field like nutrition, health care, social customs, mythological association, cottage industries and conservation of biodiversity. It also open gateway towards the research on new drugs and chemical compounds found in the plants. In recent years a number of works has been done in ethnobotany all over the world as it opens up conservation aspects of most important plants [18,19,20,21]

### **Importance of ethnobotany:**

Due to increase population and the developed technology humans are now enthusiastic to live in city. More interference in forest, increasing industry and the industrial area, uncontrolled urbanization, agricultural practices, deforestation, increase in grazing cause a disturbance in the balance system of ecology and thus cause an environmental deterioration. While the modernization of humans increases the living standard of people, but the inherited knowledge, customs and belief from the ancestor is degraded day by day. It is noticed that the indigenous knowledge on plants uses are slowly been eroded with the modernization concept.

The threat is so much that the indigenous knowledge of plants and their products is in danger of disappearing forever. There is a decline in cultural diversity and erosion of knowledge on the method of use, distribution and methods of extraction of plants and its parts. So, to conserve the knowledge and beliefs of the people before its complete degradation the ethnobotany study is proved to be a gem. Ethnobotanical studies based on scientific work which includes inventories, utilization and conservation of medicinal, religious and sacred plants both inside and outside the tribal community. The identification of the plant and its parts to cure various diseases can be listed out in ethnobotanical study.

This study may introduce new plants to human and their further benefit in research and commercialisation. The indigenous knowledge of plant uses varies with different to different community so by ethnobotany the comparative study can be done within the culture. The inter culture and intra culture variation with respect to different age, class can be documented. The use of the plants and plant parts, its consumption, methods of

consumption, doses, route of administration to cure various diseases by traditional healers, vaidyas of the village can also be documented under ethnobotanical studies.

The documentation of these plants is needed as loss of information occurs while the indigenous knowledge passes verbally from one generation to other. The identification and documentation help in conservation of plants and their surroundings. It also open futuristic research approach towards the invention of new drugs and medicines by phytochemicals analysis.

### **Use of ethnobotany**

The aim of ethno- botanists is to explore how these plants are used as food, clothing, shelter, fodder, fuel, furniture and how medicinal use of such plants is associated to other characteristics of the plant species. They understand and collect the knowledge of valuable plants by the use of anthropological method [22].

Various ethnobotanical indices are used for comparing the utilization of plants in terms of region wise, inter tribes or inter communities. The analysis of the ethnobotanical data can be done with a number of ethnobotanical indices to compare the knowledge system, uses and mode of transmission between many regions statistical analysis is performed by categorizing in various groups [23] and Cultural Importance Index (CI) are also used.

### **Ethnobotanical survey**

To perform the ethnobotanical survey questionnaires preparation is the important tool as it gives the relevant data for required study. The informant for collection of data is mainly the villagers, locals, traditional healers and priest resides in a particular community. The data collection through interview includes detail information of plants are being used from person to person. The herbarium preparation is also an important tool for the ethnobotanical survey. By the herbarium the identification and taxonomic classification of plants and documentation can be done. The survey includes common name, local name, scientific name of the plants, the plant parts that are used for medico-religious purpose. Several quantitative tools are available for analysis of ethnobotanical data like Relative frequency citation (RFC), use value (UV), informant consensus factor (ICF) fidelity level (FL), Relative popularity level (RPL) and Rank order priority (ROP) indices.

### **Problems occurs during ethnobotanical survey:**

The following problems occurs for ethnobotanist during the field survey:

- During the ethnobotanical survey people are reluctant to give information regarding their traditional knowledge on plants and its benefit.
- As the indigenous traditional knowledge is not documented and transfer generation to generation verbally, loss of information occurs.
- Difficulty in finding the right persons who possess the Indigenous knowledge and the local people might be prejudiced against officials dealing with land records or income tax and hence might be wary of researchers too.

- Researches may be unable to understand the dialectical nomenclature used by local people to describe plant species.
- The traditional healers and the elderly people have enough knowledge on plants but they have a fear of over exposure of these plants for commercial applications by medicine and drug industry.
- Due to modernization the tribal are become more civilized and thus are not willing to resides in villages and move towards the city ignoring their traditional values, customs and belief.
- Some time it is also difficult to identify the plants correctly from its local name and confusion occurs over the Latin name of the plant during documentation.

### **Strategies to overcome the problems:**

- During ethnobotanical survey the informant should be taken into confidence that the indigenous knowledge given by the tribes will not cause over exposure of plants.
- Irrespective of the modernization, the importance of medicinal plants and their uses in the developing countries must be taken seriously.
- Conducting group meetings in order to promote awareness and to motivate local people to share their knowledge.
- Conducting location specific peripatetic group meetings, demonstrations, and farm and home visits in order to address local people's problems and priorities (e.g. insects, disease) could oblige local people to reciprocate by sharing knowledge.
- Using extension teaching methods and aids helps to educate local people and appropriate counseling ensures availability of the required knowledge
- Arranging scouting competitions for local people (women, farmers, and children etc.) and selecting winners should be awarded with rewards/incentives that motivate local people to share their ITK.
- The social economical standard of the tribal people should be improved as it reduced their move towards the city for livelihood.
- The research capability in the field of traditional medicinal plants should be strengthen with proper documentation, identification and conservation of the important plants.
- Government laws and policy will be helpful in needed conservation practices.
- Informing local people about publishing documented innovations of local people in newsletters/journals acknowledging the identity of the innovator(s) and popularizing their innovations.

### **Role of ethnobotany in conservation of plants:**

The ethnobotanical studies can reveal the local cultures in a community or area and can aware of the many useful species occurring in that ecosystem. The local and indigenous knowledge is highly valuable ecological resources and most of the ethnobotanist eager to understand the traditional knowledge on plants uses in medicinal and religious purpose. This local, traditional knowledge is often rapidly lost due to modernization process of people. Due to deforestation, over pollution and other environmental challenges caused

rapid loss of biodiversity and destruction of natural ecosystem. Therefore, potentially useful foods, medicines, and materials available from plant biodiversity can be preserved if large areas of tropical forests and other natural ecosystems can be conserved in their ecosystem. It is important that local indigenous peoples should be given the opportunity to conserve their own culture. The study listed out the identification, documentation of vulnerable and endangered species presents specially on the medicinal uses of plants which are a highly dynamic, always evolving process. New knowledge is being constantly obtained and should be noted which is linked to traditional practices, given emphasis on possible economic benefits from the medicinal use of tropical forest products instead of solid timber products. The leaves, root, stem, fruit and seeds are having medicinal benefit and can improve economic conditions of the people. The non-timber forest products are a rescue towards the difficult economic condition of a country.

### **Conclusion:**

All over the world people are engaged in collection of various plants with medicinal and religious belief which involved in treating various diseases and to perform various rituals. The ethnolinguistic groups are being attached to the plants for their beliefs and daily needs. It opens gateway towards the ethnobotanical studies on these useful plants as it catches attention from the scientist and general people. The Indigenous healers and traditional healthcare practitioners throughout the world have developed rich stores of knowledge about these medicinal plants when providing services to a specific community. Various ethnobotanist has curiosity towards the uses of the plants and they perform survey through questionnaires and interview of the local people to collect the indigenous knowledge. The conservation of this indigenous knowledge holds by the local and tribal must be documented before complete depletion. As the traditional knowledge is transferred verbally from one generation to others, so to conserve these medicinally important species, the documentation, identification and collection of data related to these beneficial plants must be listed out in proper format.

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