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Utilization of Some Weeds as Medicine by the Local People in Birbhum District of West Bengal, India

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Abstract

The present paper deals with observation on ethnomedicinal use of some weeds by the local people of Birbhum district, West Bengal. The traditional system of health care has been systematically used for over two thousand years to treat illnesses. The local people basically tribal people of this district many a time depend upon the forest flora for their livelihood and use some weeds as herbal medicines in curing the ailments and diseases. Most of the weeds have been known to posses therapeutic properties and the pertinent traditional knowledge was passed on orally through generations. Plants provide various medicines whose uses are without side effects. This knowledge has been threatened in its existence and is gradually being lost from society due to erosion of its culture. Finally total numbers of 20 plant species belonging to 18 families have been enumerated according to their botanical names along with families, local or tribal names, parts used, disease cured, mode of administration, etc. This folk knowledge of herbal medicine should be documented immediately before it gets lost forever and therapeutic validation of these herbal medicines is emphasized.

1. Introduction

Since the dawn of human civilization, men have used plants as a source of medicine, because they were easily available in the immediate environment. The most effective plants from them were selected and now they are part of ethno medical traditions. Weed species interfere with our endeavors, such as agriculture or animal farming, recreational pursuits, including gardening, transport, bush walking and water sports etc. Globally, the utilization of weeds has been patchy over the past few decades. Nevertheless, there is a renewed interest in focusing on utilization of weeds in productive ways, so that people may benefit from an aspect that has been largely ignored (Chandrasena, 2007). 'Utilization' has been recognized as an effective means of weed management. Weeds have been used for long time as sources of food, fiber, dye, medicines, etc. Unlike other crop plants, weed plants are less vulnerable to disease and insect attack. The indigenous system of medicine practiced in India is based mainly on the use of plants. Charaka Samhita (1000 BC-100 AD) has recorded 2000 vegetable remedies. There are about 120 weed species in India used as medicinal purpose (Naidu et al., 2005). Ancient medicine was not solely based on empiricism and this is evident from the fact that some medicinal plants which were used in ancient times still have their place in modern therapy (Das and Mondal, 2012). Weeds are highly valued in traditional medicine systems and have been used by indigenous communities for curing different ailments for thousands of years. Most of weeds have been known to posses therapeutic properties and the pertinent traditional knowledge was transferred orally through generations. Use of crop field weeds as folk medicines in Bankura district have been reported earlier (Mukhopadhya and Duary, 1995; Mukhopadhya et al., 1995; Mukhopadhya and Duary, 1997). It is clear that new pharmaceuticals are like to be found in colonizing plants, and as Stepp (2004) suggested, weeds need to be given more attention as potential sources of phytomedicines. This is important because according to an estimate of WHO, approximately 80% people of developing countries rely chiefly on traditional medicine for primary healthcare (Ghosh, 2008). Plants have been used as a source of medicine for living being from ancient period of time. Documentation of traditional knowledge of ethno medicinal use of plants has been considered as a high priority to support the discoveries of drugs benefiting mankind. The tribal populations, who have been the primary inhabitants of natural habitats, hold tremendous amount of traditional knowledge on the use of various biotic resources, which may have greater importance to the ongoing research and discoveries in the

field. It is well acknowledged in literature that their age old practices of using plants to cure numerous ailments have paved the way to further the discovery of many life saving drugs. This represents over 550 medicinal plants, which may offer incredible scope for the development of pharmaceutical sector as potential commercial hub, boosting economy of the state. Ethno-medicinal explorations and simultaneous prioritization of pharmaceutically important plant species for conservation through ex-situ cultivation have been identified as vital aspects for the drug industrial development (Pradhan and Badola, 2008). Herbal medicines are becoming popular worldwide due to its growing recognition of natural products being cheaper and without any side effects. Demands for medicinal plants are increasing in both developing and developed countries. Out of the 20,000 medicinal plants listed by the WHO globally India's contribution is 15-20%. In India, about 2,000 drugs used are of plant origin. India contains over 5% of the worlds' diversity though it covers only 2% of the earth's surface but it is also one of the biodiversity hotspots of the richest and highly endangered eco-regions of the world. At present, there is a worldwide movement for assessing the plant resources and researches for new plants which are of medicinal and economical value and importance. Researchers are focusing mainly on ethnobotanical and ethno medicinal investigation to fulfill the increasing demand of herbal products. The traditional knowledge of herbal medicine is much enriched here in the district due to its diversified plant wealth and this valuable knowledge which is still surviving in the tribal culture has to be documented immediately before it gets lost forever. With this perspective present investigation has been carried out to provide the significant information regarding traditional uses of weeds as folk medicine by the local people of Birbhum district, West Bengal which are the new addition to the district inventory of ethnomedicine.

2. Materials and Methods

The present study deals with the indigenous knowledge related with ethnomedical uses of weed plants used by the local people of Birbhum district in West Bengal. The district extends over an area of 4545 sq.km and it is situated between $87^0 10^/$ & $88^0 2^/$ east longitude and between $23^0 33^/$ & $24^0 35^/$ North latitude. The temperature varies from 11^0C (in January) to 42.9^0C (in May). The annual average rainfall is 1098mm. The major tribal groups of the district are *Santal, Kora* and *Oraon* (Census of India, 2001). The rural people mostly depend on cultivation. Prior to the field visits, extensive literature survey was carried out on the previous ethnomedicinal and floral reports on the district. Rural areas were visited during summer, monsoon and winter to avail most of the plants in their conditions. During the visits, the informants were chosen on the basis of structured questionnaire. The methodology was adopted as described by Jain (1999), Chadwick and Marsh (1994). Structured questionnaires, interviews and participatory observations were used to elicit information from the resource persons using standard methods (Martin, 1995). The data was recorded in a data sheet with the names of the plants, families, local names, parts used, ethnomedicinal uses. Informants were selected on the basis of their ability to identify a particular plant *in situ* and their basic knowledge of ethnomedicine. Local herbal medical practitioners (folk doctors) and elderly people were preferred during the interviews.

Generally the two types of interviews were taken, firstly of individuals and secondly of groups. Of individuals, persons were selected at random on the way or entering a hut finding out knowledgeable individuals from the village or also the Headman. In group interviews more than one individual were approached, our purpose explained and interviews taken. They were requested to collect specimens of the plants they knew or to show the plant species on site. The collected plant species have been carefully identified with the help of different Floras and standard literature (Datta and Banerjee, 1978; Jain, 1987; Jain, 1991; Sanyal, 1994; Maheswari, 2000; Tribedi and Sharma, 2004). The plant specimens have been preserved as herbarium specimen following conventional techniques (Jain and Rao, 1977).

3. Results and Discussion

Locally available weed plants are used by the peoples for their household remedies and various purposes. The data has been verified from the ethnic people of different tribal areas. Information for treating a particular ailment from different informants certainly reflects the accuracy and authenticity of the folk drugs employed. The major weed flora associated with transplanted rice in the district are *Alternanthera philoxeroides, Alternanthera sessilis, Ammania baccifera, Commelina nudiflora, Cyanotis axillaris, Lindernia ciliata, Lindernia crustacea, Ludwigia parviflora, Marsilea quadrifolia Ammania multiflora, Jussia repens, Sphenoclea zeylanica, Croton bonplandianum, Portulaca oleraceae, Leucas aspera, Asteracantha longifolia, Bacopa monnieri* among broadleaved, *Cynodon dactylon, Dactyloctenium aegyptium, Digitaria sanguinalis, Echinochloa colonum, Echinochloa crusgalli, Echinochloa glabrescens, Paspalum distichum* among grasses, *Cyperus difformis, Cyperus iria, Cyperus compressus, Fimbristylis miliacea* and *Scirpus articulatus* among sedges and *Chara zeylanica,* as algal weeds.

Weed flora in rabi crops are *Anagallis arvensis, Celosia argentea, Chenopodium album, Croton bonplandianum, Drymaria cordata, Eclipta alba, Gnaphalium indicum, Gnaphalium pensylvanicum, Gomphrena celosioides, Gnaphalium purpureum, Oxalis latifolia, Physalis minima,*

Table: Weeds used as medicine by the local people of Birbhum district

SL. No	Botanical name	Family	Tribal/Local name	Parts used	Ailments	Mode of administration
1.	*Echinochloa colona*	Poaceae	Shyama ghas/ Lakshmi ghas	seed	digestive stimulant tonic for the liver	Cooked or eaten raw with rice
2.	*Argemone mexicana*	Papaver-aceae	Shialkanta	Whole plant, Leaves, seeds, roots flowers, fruits. yellow juice, latex	Analgesic, antispasmodic, antitussive, demulcent, emetic, expectorant, hallucinogenic, purgative, sedative, skin warts, impotence	The root has been used in the treatment of chronic skin diseases. The flowers areexpectorant and have been used in the treatment of coughs. The seed has also been used as an antidote to snake poisoning. The oil from the seed is purgative. It has been used in the treatment of skin problems.
3.	*Cyperus rotundus*	Cyper-aceae	Mutho ghas	Root	Digestion	To make paste with small amount of salt and should be taken daily after major meal
4.	*Alternan-thera sessilis*	Amaran-thaceae	Sinche sak/ Senchi sak	Whole plant	burning sensation, diarrhea, skin disease, dyspepsia, hemorroids, liver and spleen diseases and fever.	Plants are made into paste and paste is administered as poultice on affected body part.
5.	*Ammania baccifera*	Lythra-ceae	Dadmari	Whole plant	burning sensation	Paste of whole plant
6.	*Commelina nudiflora*	Com-meli-naceae	Kansira	Whole plant	skin disease	Juice of whole plant
7.	*Marsilea quadrifolia*	Marsili-aceae	Susoni sak/ Susni sak	Whole plant	cough, bronchitis, diabetes, psychiatric diseases, eye diseases, diarrhea and skin diseases	Used as vegetables and juice of leaves is applied on affected area.
8.	*Echinochloa crusgalli*	Poaceae	Molanda, Dotala ghas	Whole plant	spleen and in check-ing haemorrhage	Take juice daily
9.	*Cynodon dactylon*	Poaceae	Durba, Dubba ghas, Duburi ghas	whole plant Leaf	congestive heart failure, diarrhea eye tonic, prevent conjunctivitis	Drink juice daily
10.	*Chenopo-dium album*	Chenop-odiaceae	Bethu, Beto sak	Leaves	Appetizer, dysentery, digestive	Leaf as vegetables
11.	*Polygonum plabeium*	polygo-naceae	Maskati' Chikni sak	Whole plant	bleeding, dysentery and haemorrhoids	Fresh juice is applied in affected area and leaves are used as vegetables
12.	*Taraxacum officinale*	Aster-aceae	Dandelion	Whole plant Root	digestive stimulant tonic for the liver	To make paste with small amount of salt and should be taken daily after major meal
13.	*Ludwigia parviflora*	On-agraceae	Bon Labanga, Saga ghas	Root	Cancer	Drink Juice daily
14.	*Croton bon-plandianum*	Euphor-biaceae	Ban tulsi, Bhabri	Stem Leaves	Clotting of blood, curing of wounds	Leaves juice and latex are applied

15	*Centella asiatica*	Umbellifereae	Thalkuri, Thankuni	Twigs, Leaves	Blood dysentery, appetizer	Fresh leaves and twigs in empty stomach for 5-7 days cure blood dysentery
16	*Eclipta alba*	Asteraceae	Kesut, Keshukti	Leaves Whole plant	Cooling effect on brain, Skin diseases	Fresh leaves are applied with sesame oil to cure baldness/elephantiasis & headache and juice of whole plant is applied on affected area on skin.
17	*Portulaca oleracea*	Portulacaceae	Nunia sak, Luniya sak	Whole plant	Cooling in stomach, skin, dysentery	Whole plant juice boiled against dysentery and prickly heat in stomach
18	*Leucas aspera*	Lamiaceae	Drone, Halkusa	Leaves	Skin diseases, cough and cold	Fresh leaves juice applied in skin eruption, allergic swelling and other swellings
19	*Asteracantha longifolia*	Acanthaceae	Kulekhar, Kulata	Leaves	Diuretic, blood purifier	Boiled juice of leaves used against anaemia (7-10 days)
20	*Bacopa monnieri*	Scrophulariaceae	Brahmi sak, Baramblu	Whole plant	Improvement of intelligence & memory, youthful vitality	Used as vegetables for improvement of intelligence & memory and nervous system

Polygonum plebeium, Solanum nigram, Spilanthes acmella Melilotus alba, Melilotus indica, Physalis minima, among broad leaved; *Cynodon dactylon, Digitaria sanguinalis, Echinochloa colonum* among grasses and *Cyperus rotundus* as sedges.

Major weeds associated with sugarcane are *Argemone mexicana, Ageratum conyzoides, Blumea lacera, Commelina nudiflora, Convolvulus arvensis, Eclipta prostrata, Eclipta alba, Lindernia crustacea, Ludwigia parviflora, Gomphrena celosioides* among broad leaved; *Cynodon dactylon, Dactyloctenium aegyptium, Digitaria sanguinalis, Echinochloa colonum* among grasses and *Cyperus rotundus, Cyperus compressus* among sedges.

The chilli crop is infested with *Gnaphalium indicum, Gnaphalium pensylvanicum, Gnaphalium purpureum, Phyllanthus fraternus, Physalis minima, Solanum nigrum, Tridax procumbens, Vernonia cineria.*

Weeds associated with summer vegetables are *Alternanthera sessilis, Amaranthus viridis, Croton bonplandianum, Euophobia hirta, Trianthema portulacastrum* among broad leaved weeds; *Cynodon dactylon, Digitaria sanguinalis, Echinochloa colonum* as grasses and *Cyperus rotundus* as sedge (Anonymous 2010).

In our investigation we found that tribal people of Birbhum district use some of these weed plants in different ways which is devoid of Ayurvedic and Unani medicinal system. These are as follows:

There are numerous uses of weed species as herbal medicines to cure a host of body ailments and diseases in this region. Now, traditional knowledge regarding the use of medicinal plants has been threatened in its existence and is gradually being lost from the traditional society due to erosion of its culture. It is now high time for us to document the herbal traditional knowledge before it gets lost from the tribal society forever and simultaneously to conserve these medicinal plant resources also. The data provided in this study will finally be helpful to prepare the district as well as state inventory on folk medicine. This traditional herbal knowledge of the studied areas needs proper documentation otherwise it will be lost from its folk society forever. The information documented in this investigation, will further be validated through phytochemical, pharmacological and clinical studies. The various folk medicinal uses of plants recorded here in this investigation need further scientific studies for their therapeutic validation. However, more research is needed to verify the active chemicals and how herbal medicines, based on weeds, can cure human diseases. Thus, investigating therapeutically or allelopathically active compounds in colonizing plants presents a scientific challenge. Elucidating the chemistry of these bioactive compounds will led to identifying opportunities for future development of medicines (Schutz et al., 2006).

4. Conclusion

Weeds are clearly highly successful plants owing to their special characteristics that confer superior colonizing ability and competitiveness. These attributes can be useful in many situations, such as in repairing damaged ecosystems. Weed species which are used for medicinal plants will receive more attention because 80% of the world population continues to rely mainly on traditional medicines for their health care. Studies on verification of chemical component in specific medicinal weeds will give a clue of synthesizing a new medicine.

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