

Traditional knowledge of weeds: a study of herbal medicines and vegetables used by the Assamese people (India)

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S u m m a r y

Field collections of herbal weed plants were conducted and studied. The research study aimed to determine the economic values of some herbal weed plants in Barpeta district used by Assamese communities in traditional purpose. Specifically it aimed to describe the economic value with respect to their use as vegetables and other medicinal benefits. Results of the study revealed 30 species in 22 families of herbal weeds which were collected in the study sites. The herbal weed plants exhibited morphologically were different from each other and were found economically important because of their medicinal values. The traditional knowledge of these weed plants as leafy vegetables and medicine recorded in this paper are hitherto unknown or less known to the world.

Key words: medicinal plants, traditional knowledge, vegetables, weed

INTRODUCTION

Man is using plants since the dawn of civilization to treat various diseases, disorders and as food. This interaction of man and plants leads to the establishment of the traditional knowledge of plants. A plant in one place may be useful as food, feed, fibre and medicine, while at others it may be a weed. Thus, plant species cannot be considered as weed under all circumstances [1].

Assam state of India is one of the few places on earth with such a unique biodiversity, comprising different climatic zones with a wide range of plant species. This traditional knowledge of ethnic groups around the globe forms the basis of modern plant based manufacturing especially allopathic medicine as well as food processing industry. Certain practices are unique to a given culture of a society and vary between countries, regions, villages and even communities, and this knowledge of the people has been termed as indigenous knowledge [2]. India is a country of national food self-sufficiency and able to export food. However, hunger and malnutrition are still found in many rural and urban areas.

Leafy vegetables (greens) play a major role in the Assamese diet, probably due to the influence of traditional herbal medicine, easy accessibility and low cost. Further, green leaves are considered as a main source of vitamins, minerals and fibre for local consumers. Due to their dietary importance, many scientific studies have been carried out on the nutritive values of green leaves. Information as well as misinformation regarding the true nutritional and/or undesirable effects play a major role in this process of selection. There are plenty of reports published worldwide about the risk of misidentification of culinary herbs as well as the consumption of toxic herbs, which can cause irreparable damage to vital organs and body functions including death.

Exotic vegetable species cannot be grown under the harsh climatic and resource-poor conditions encountered in many of rural areas with this problem. However, there are a number of indigenous and traditionally grown plant species which could help alleviate this situation.

The use of wild plant foods in Barpeta with low agricultural potential or during flood periods contributes to food security and provides dietary supplements to the staple diet. Vegetables are of great importance in helping alleviate this problem as they significantly contribute the amount of calories and other nutrients in the diet. The scarcity of vegetables, or their scarcity in the diet, is a major cause of vitamin A deficiency, which causes blindness and even death of small children throughout the developing countries.

Available literature regarding the usage of herbal medicines confirms the significance of the topic in the present context. A big effort on the documentation of indigenous and traditional knowledge has been made by different workers since a few decades [3-5].

The use of wild plants as leafy vegetables is very common in Assam. Some of these species are also very popular but some species are sought-after more than

others. In the present paper an attempt has been made to highlight the most popular weed species used traditionally as leafy vegetables and medicine in Barpeta district of Assam.

MATERIALS AND METHODS

The present study was conducted in a few selected villages of Barpeta District including Patacharkuchi, Pathsala, Kanduguri, Bamakhata, Bohori, Howly, Barpeta Road and Sarupata. Barpeta district is located at 26° 5' N-26° 49' N latitude and 90°39' E-91.17' E longitude, at elevation of 35 MLS in the north-eastern part of India. This region of India has been identified as one of the 34 hotspots of the global biodiversity [6]. Comprising of seven sister states, abounds in natural resources including many endemic plants and about 50% (± 8500 sp) of the floristic wealth of India (source: Botanical Survey of India).

With the help of questionnaire, plant uses and the indigenous knowledge regarding the traditional uses of plants were collected. Local people especially house wives of this area were interviewed for collection of information about vegetables and other uses of plants. The local uses of enigmatic specimens were also confirmed by elderly people having knowledge of local herbs.

Available literature on the activity of these plants was also surveyed in order to check the validity and authenticity of vegetables used by the rural folk of the surveyed area, so as to establish possible rationale between the real life uses and available data on these plants. The plant species were collected for identification and confirmed with the help of available literature [7, 8] and herbaria available in Botanical Survey of India, Shillong.

RESULTS AND DISCUSSION

The weeds may cause heavy damages. On the other hand, they have many beneficial uses in our daily life. The most important positive aspect of weeds is that nearly all of them are known to possess therapeutic properties and are being used by native people as a remedy for a variety of human and cattle diseases [9]. Plants of 22 different families were collected and identified with their folk uses. The data on wild plants which contain information on botanical names, family, part used as vegetables, medicine are enumerated in table 1.

Table 1.

List of wild vegetable plants in Barpeta district used by Assamese people

genus	family	locality/habitat	parts used	medicinal value
1. <i>Alternanthera sessilis</i> (Linn.) R. Br. ex DC.	Amaranthaceae	throughout the district, especially around tanks and ponds	whole plant as a vegetable	whole dried plant in diseases due to vitiated blood and obstinate skin diseases
2. <i>Amaranthus spinosus</i> L.	Amaranthaceae	cultivated fields, waste places and along roadsides	whole plant as a vegetable	in cough, bronchitis and consumption; externally emollient
3. <i>Besella alba</i> Linn. var. <i>nubra</i> Stewart	Basellaceae	grown as a pot herb in almost every part in the study area	whole plant as a vegetable	Cooling medicine in digestive disorders. Leaf juice used in catarrhal affections. Externally applied in urticaria, burn. Root – decoction is given to stop bilious vomiting and in intestinal complaints
4. <i>Boerhavia diffusa</i> Linn.	Nyctaginaceae	throughout the district, especially around water ponds	whole plant as a vegetable	diuretic, anti-inflammatory, antiarthritic, spasmolytic, antibacterial, used for inflammatory renal diseases, nephrotic syndrome, dropsy a. Root – anticonvulsant, analgesic, expectorant, CNS-depressant, laxative, diuretic
5. <i>Centella asiatica</i> (Linn.) Urban	Apiaceae	in marshy places throughout the study area	whole plant as a leafy vegetable	extracts orally to treat stress-induced stomach and duodenal ulcers, used as a brain tonic and sedative
6. <i>Chenopodium album</i> Linn.	Chenopodiaceae	common herb	leaves and tender twigs used as a vegetable	Laxative, anthelmintic against round-and hookworms, blood-purifier. An infusion is used for hepatic disorders, spleen enlargement, intestinal ulcers, and used for treating burns.
7. <i>Celosia argentea</i> Linn.	Amaranthaceae	common weed, occurring throughout the surveyed area	leaves used as a vegetable	flowers used in menorrhagia, blood-dysentery; seeds – anti-diarrhoeal, also used in stomatitis; whole plant – antibacterial and cooling
8. <i>Colocasia esculenta</i> (L.) Schott. var. <i>black</i>	Araceae	road sides, a common weed abundantly found in rode side, near water ponds	leaves and petiole used as a vegetable	juice from petiole – styptic
9. <i>Eichhornia crassipes</i> Solms Laub	Pontederiaceae	a common weed found especially in tanks and ponds	flower used as a vegetable	flower – antifungal, used in skin diseases
10. <i>Erihthra fluctuans</i> Lour	Asteraceae	a common weed found especially in tanks and ponds	leaf used as a vegetable	leaf – laxative, demulcent, anti-dermatosis; used in dyspepsia, diseases of the nervous system and cutaneous affections

11. <i>Oxalis corniculata</i> Linn.	Oxalidaceae	throughout the surveyed area as a common weed	whole plant	plant – boiled with butter milk is a home remedy for indigestion and diarrhea; used for dyspepsia, biliousness and dysentery; also anti-inflammatory, analgesic, antipyretic
12. <i>Solanum indicum</i> Linn.	Solanaceae	road sides	fruit used as a vegetable	root – carminative, expectorant; used for colic, dysuria, coughs and catarrhal affections
13. <i>Hydrocotyle javanica</i> Thunb.	Apiaceae	Cultivated field and waste places throughout the surveyed area.	whole plant used in curry	used as a substitute for <i>Centella asiatica</i> , as a blood purifier (in cutaneous diseases); for indigestion, dysentery and nervousness; the plant is used for treating leucoderma
14. <i>Nasturtium officinale</i> R. Br.	Brassicaceae	a common weed found especially near tanks and ponds	whole plant	Leaves – expectorant (used in catarrh of the respiratory organs); diuretic (used in kidney and bladder disorders), detoxifying; a lotion of leaves is applied to blotches, spots and blemishes. Fresh herb is used as a blood purifier
15. <i>Nelumbo nucifera</i> Gaertn.	Nymphaeaceae	Tanks and ponds	premature flowers used as a vegetable	flowers extract is given in cholera, fever, palpitation of heart; rhizomes – given in piles and dysentery; applied externally to cutaneous eruptions, scabies and ringworm
16. <i>Nymphaea stellata</i> Willd	Nymphaeaceae	Tanks and ponds	flower used as a vegetable	flowers and rhizomes – astringent, demulcent, mild sedative, spasmolytic, antiseptic; used in infusion internally for chronic diarrhoea, as a douche for leucorrhoea and vaginitis, as a gargle for sore throat; also given internally in prostatic; seeds used in diabetes
17. <i>Pedderia foetida</i> Linn.	Rubiaceae	throughout the surveyed area	leaf used in curry	leaf – carminative, anti-inflammatory, astringent, spasmolytic, anti-diarrhoeal, diuretic, antilithic. root – anti-inflammatory, used for rheumatic affections, piles, in liver, spleen and chest inflammations
18. <i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson	Araceae	throughout the surveyed area	corm used as a vegetable	dried corm in the dose of 2–10 g used especially in the treatment of piles
19. <i>Nymphaea rubra</i> Roxb. ex Salisb.	Nymphaeaceae	tanks and ponds	premature flower used as a vegetable	flower – astringent, cardiac tonic; used in palpitation of heart; rhizomes used for dysentery and dyspepsia
20. <i>Sagittaria sagittifolia</i> Hook. f. (non L.)	Alismataceae	throughout the districts	tuber and leaf used as a vegetable	plant – discutient, antilactagogue, astringent, anti-inflammatory; tuber used for cutaneous diseases, leaves powder dusted in pruritus; mashed with molasses used in sore throat and breast inflammation
21. <i>Ipomoea aquatica</i> Forsk.	Convolvulaceae	throughout the districts near pond and tanks	flower and leaf used as leafy vegetables	plant juice is used for liver complaints; buds for ringworm; buds recommended as diabetics food

22. <i>Calamus erectus</i> Roxb	Araceae	throughout the districts	young shoot used as a vegetable	astriagent, antidiarrhoeal, anti-inflammatory (used in chronic fevers, piles, abdominal tumours, strangury), antibilious, spasmolytic
23. <i>Portulaca oleracea</i> Linn.	Portulacaceae	throughout the districts	whole plant used as vegetable	used in scurvy and in diseases of liver, spleen, kidney and bladder; also in dysuria, stomatitis and dysentery; a paste of leaves is applied to swellings, erysipelas, burns and scalds; seeds – diuretic, antidyenteric; applied externally to burns and scalds
24. <i>Diplazium esculentum</i> (Retz.) Sw.	Athyriaceae	rode sides and waste land	vegetable fern most commonly used in recipes and made into stir fry	nutritive and bowel regulator
25. <i>Hedyotis corymbosa</i> (L.) Lam.	Rubiaceae	wet, low lands and in cultivated fields	leaf/ whole plant used as vegetable	Improves digestion, stimulates action of liver
26. <i>Drymaria cordata</i> (L.) Willd. ex Schult.	Caryophyllaceae	throughout the districts	whole plant used as vegetable	not known
27. <i>Commelina benghalensis</i> L.	Commelinaceae	throughout the districts in moist places	leaf used as a vegetable	emollient, laxative, and diuretic
28. <i>Solanum nigrum</i> L.	Solanaceae	dry parts of the districts	leaf used as leafy vegetables	anti-inflammatory, antispasmodic. Leaves paste used in rheumatic swellings and skin diseases.
29. <i>Sida rhombifolia</i> L.	Malvaceae	throughout the districts in moist places	young shoot and leaves used as a vegetable	Used in pulmonary tuberculosis, nervous diseases and rheumatism. Leaves-applied to swelling as paste
30. <i>Eclipta alba</i> (L.) Hassk.	Asteraceae	throughout the surveyed area	young shoot and leaves used as a vegetable	Used in hepatitis, spleen enlargements, chronic skin diseases

Human existence, grazing and cultivation exert enormous stress on the vegetation and result in habitat destruction. Most of district Barpeta inhabitants utilized plant resources. However, a large fraction of population also depends on agriculture and agro forestry. Due to ignorance and weak communication most people, especially younger generation, forgot indigenous knowledge of plants. But most of people, especially elderly ones, still possess the knowledge of wild resources [10]. There is a need for careful conservation of the plants resources of the region. Otherwise many wild species may become extinct.

The indigenous knowledge system, traditional technologies and resource management practices of different ethnic communities of north-eastern India provide ample opportunities for agricultural diversification as well as intensification [11]. The present study will throw light on wild plants used as components of agriculture sector and contribute its economic development. The sustainable harvesting of plants having both medicinal and economic value has a great potential. In fact, there is no local awareness about proper collection of various species. Thus there is a need to create awareness of the importance of these plants among local people and to provide them guidance and training in collection and processing to enhance their income.

The recipes along with medicinal values presented in the paper are a part of the empiric knowledge confined to the Assamese people of the study area. However, the authors feel further intensive studies in this sphere may provide some useful information to phytochemists, pharmacologists etc. for screening of individual species and rapid assessing of some useful drugs. Again, the medicinal plant species used traditionally by the villagers should be properly tested to confirm their safety and efficacy. Big attention should be paid to proper exploitation and utilization of the herbal plant species along with their scientific conservation, preservation, propagation and, to a certain extent, their domestication.

CONCLUSION

From the present study it appears that though Barpeta district is very rich in flora of enormous diversity, a large number of species still remain unexplored. Therefore, proper attention to the use of the plants as reported in the paper, may lead to the exploration and invention of new drugs and vegetables in the near future.

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TRADYCYJNA WIEDZA O ROŚLINACH DZIKO ROSNĄCYCH UŻYWANYCH JAKO WARZYWA
I DO CEŁÓW LECZNICZYCH W REGIONIE BARPETA (PROWINCJA ASSAM, INDIE)

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Streszczenie

Celem badania było sprawdzenie wartości użytkowej niektórych roślin dziko rosnących używanych przez mieszkańców prowincji Assam (region Barpeta) w medycynie tradycyjnej. Szczególnie chodziło o skatalogowanie wartości użytkowej roślin używanych jako warzywa i w celach leczniczych. Studium objęło 30 gatunków z 22 rodzin. Morfologia tych roślin zielarskich była różna. Tradycyjna wiedza na temat zastosowania tych roślin zarówno w celach leczniczych, jak i spożywczych nie była do tej pory rozpowszechniona na świecie.

Słowa kluczowe: rośliny lecznicze, wiedza tradycyjna, warzywa, chwasty