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WILD EDIBLE PLANTS USED BY THE TRIBALS OF PALI DISTRICT, RAJASTHAN

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A scientific study of wild edible plants is important for pin pointing the potential sources which could be utilized at the time of scarcity or during normal days or cultivated as a source of food materials for an ever increasing population, execution of unplanned developmental activities and anthropogenic factors which have resulted in a serious ecological imbalance and degeneration of the biodiversity. This paper enumerates and some wild edible plants in the diet of tribals of Pali district, Rajasthan.

Keywords : Food; Tribals; Wild edible plants.

Introduction

Rajasthan is the largest state of India in terms of area and is also home to many tribes. According to the Scheduled Castes and Scheduled Tribes Act 1976, twelve tribal groups were included in the state of Rajasthan. Of these twelve Scheduled Tribes, the Meena and the Bhil along with Damor, Garasia and Sahariya constitute the major tribal groups of the state. Tribals form a distinct group compared to other populations. Their food intake is influenced by nature, with large seasonal variations, depending upon availability of agricultural and forest produce. Several studies have documented a close relationship between the tribal ecosystems and their nutritional status. Wild plants are storehouses of essential fatty acids - especially linolenic acid and micronutrients such as calcium, phosphorus, potassium, magnesium, zinc, copper and iron.

Today, most human plant food is based on rather limited number of crops, but it is clear that in many parts of the world the use of wild plants is not negligible[1-3]. Many publications have emphasized on the diversity and value of wild edible plants[4,5]. The nutritional value of traditional wild plants is higher than several known common vegetables and fruits[6,7]. Ethnobotanical studies in the tribal dominated area of Aravalli hill of Rajasthan have been carried out by several workers[8-11].

Pali, with its glorious historical background is an important district of Rajasthan. The area of 12,387 sq. km of Pali district is located between 24.45 degree to 26.75 degree North Latitude and 72.48 degree to 74.20 degree East Longitude. The most striking geological feature of the district are the Aravallis. These hills ranges possess an abundant population of various tribes. The main tribes of the study area are Bhil, Meena, Garasia and Kathodi.

The climatic conditions of Pali district are somewhat different than those of Western Rajasthan. Although basically in the summer season the temperature rises up to 46-47°C a large variation in temperature is found due to adjoining green and hilly Aravalli ranges. Winters are moderately cool during December-January lowering the mercury to 4-5°C occasionally. Average rainfall in the district during the months of July-October is 300 mm. The whole Aravalli mountain ranges are well stocked with shrubs and herbs of priceless worth and high medicinal values.

Although much has been documented on the ethnomedicinal and floristic aspects of plants of this district, howerever there is no concrete report about the wild edible plant resources. Keeping this in view, the present study was conducted in the region to explore and identify the wild edible plant resources, to record the indigenous traditional knowledge of utilization.

Material and Methods

Ethnobotanical survey of tribal areas of Pali district was conducted repeatedly in 2007-09 during different areas and seasons. The information on different uses of plants is based on the exhaustive interviews with local physicians, village headmen, priests and tribal folks. During our survey, it was observed that women of the tribal areas also have good knowledge of plants. The secondary informations were collected form non tribal people like forest official, government physician, reason being their long association with the tribes and that area.

Whenever possible, the voucher specimen were collected, processed as per routine herbarium methods; identification of collected plant material were made either

in the field itself or in laboratory following the different floras, given accession numbers and deposited in the Herbarium of Department of Botany, University of Rajasthan, Jaipur.

The tribals are children of nature and their lifestyle is conditioned by the Ecosystem. No one truly knows the woods until he can find with certainty a number of wild plants that furnish good food for man in the season when food is scarce. Ethnobotanical survey among the tribals inhabiting Pali district of Rajasthan has brought to light a number of wild plant species used as edibles. The plant parts, *viz.*, tubers, stems, leaves, flowers, fruits and seeds are used in raw or cooked form. The health, vitality and longevity enjoyed by the tribals have been attributed by them to these wild edibles. An inventory of flora of food plants was thus developed (Table 1).

Food is cooked traditionally on 'Chulla' in earthen vessels. It was done with a belief that food does not get spoiled in these vessels. Food is cooked and eaten in privacy because of strong belief of existence of 'Dakin' or Evil Spirit. During the monsoon season, they grow millet, which is then ground into flour for their staple food, chapatis. Sangari, the small, bean-like fruit of the khejadi tree, is dried and mixed with the berry of the kair, a desert bush. chapatis, sangari and kair berries are the staples at most meals, frequently supplemented with butter and yogurt,

'Maize roti' is prepared after kneading the maize flour (flour is milled by hand mill) with hot water. They also made 'Dhokla' from maize, which is a favorite tribal food. It is not different than maize chapati but maize doe is directly roasted on slow combustion.

'Rabdi' (maize porridge) prepared out of maize crushed, is another tribal dish. The crushed maize is boiled in water till it gets cooked. Buttermilk is poured and salt is added before eating. The addition of butter-milk is subject to availability. They also prepare maize curry from maize flour as a substitute for vegetable. Hence they eat maize with maize.

They saute vegetables or pulses with ghee/oil only when there is a special guest or during ceremonies/ festivals. Pulses and vegetables were not washed before cooking. As observed, preparation of green chillies either as chutney or vegetable was very common rather a part of their daily food.

The diets of tribals primarily consist of cereals and pulses. Among cereals, their diet is confined to maize and jowar. However, rich tribals eat wheat and rice comparatively more. Maize or any other cereals are eaten either as chapatti, gruel or cereal porridge, locally called 'Thuli'. As regards, pulses, they eat frequently 'Moong', 'Urd', and 'Tuar'. Cooked dal is much diluted with water, with lot of red and green chillies. Intake of vegetables compared to pulses was low.

On enquiry, it was told that less amount of grain were consumed for cooking porridge/gruel and so that more members can eat. Boiled pulses or vegetables were generally eaten. It is perhaps sheer compulsion arising out of poverty.

The choice of food was largely determined by their cultural practice and existed beliefs. Certain foods were socially prestigious while others were treated as neglected food. It is more or less become customary in their society to prepare a dish out of rice, wheat and non-vegetable at each ceremony / festival which they prefer to consume with liquor.

Tree leaves, flowers and pods are also identified as useful for improving milk production, milk fat, body condition and for the induction of oestrus.. Feed mixtures are usually given after soaking or cooking. The use varies with season, depending on availability. Different animals are fed with different types of tree species e.g. *Diospyros melanoxylon* and *Ailanthus excelsa* (ardu) leaves are used all year round to feed goat and cattle for the improvement in milk production. *Maytenus emarginata* (kankera) leaves are used from February to June for cattle and buffalo to improve fat per cent in milk. *Madhuca indica* (mahua) leaves, flower and fruit wall (pericarp) are given from April to June to cattle and goat for improvement of milk yield.

Results and Discussion

Among discussions with tribals and villagers, wild food plants are used as common household food and make a substantial contribution to food security of the tribals and villagers in the study area. Many plants are cultivated by tribals abundantly and sold in nearby market. These plants have much nutritional value like *Curcuma amada, Daucas carota, Asparagus racemosus, Raphanus sativus, Momordica dioica, Withania somnifera* and *Zingiber officinalis*. A number of indigenous potential plant species which support life in more extreme environmental situations as in the hot Indian desert have been well documented[11-13]. The findings suggest further investigation into nutritional profits, processing methods, cultivation techniques, conservational studies and pharmacological properties of the reported plant species. Many of the wild food may not be freely available in future due to overexploitation, habitat destruction, regular forests fires and invasion of alien exotic species. So efforts must be taken to conserve wild food plants and also the traditional

Table 1. Wild edible plants used by tribal people of Pali district.

S.No.	Plant's name	Family	Useful Part	Mode of Consumption
1.	*Achyranthus aspera*	Amaranthaceae	Young plant	as vegetable
2.	*Adhatoda vasica*	Acanthaceae	Flowers	eaten as vegetable
3.	*Amaranthus spinosus*	Amaranthaceae	Tender shoots and young leaves Mature stems	used as vegetable piled, cut into small pieces and cooked as vegetable
4.	*Argyreia nervosa*	Convolvulaceae	Leaves	eaten as vegetable
5.	*Asparagus recemous*	Liliaceae	Young shoots	eaten cooked or raw
6.	*Bacopa monneri*	Scrophulariaceae	Leaves and tender shoots	eaten cooked as vegetable
7.	*Bauhinia variegata*	Caesalpiniaceae	Flower buds seeds	eaten cooked eaten after roasting
8.	*Boerhavia diffusa*	Nyctaginaceae	Young leaves	eaten cooked as vegetable
9.	*Bombax ceiba*	Bombacaceae	Unripe fruits Flowers	eaten raw cooked as vegetable
10.	*Cannabis sativa*	Cannabinaceae	Young leaves along with tender shoots	sometimes eaten as vegetable mixing with others, gives a nar cotic effect, not to be given to children
11.	*Carissa carandas*	Apocynaceae	Fruits	either eaten raw or pickled.
12.	*Cassia fistula*	Caesalpiniaceae	Flowers and flower buds Pod	sometimes eaten as vegetable The pulp of ripe pod is eaten fresh
13.	*Centella asiatica*	Apiaceae	Leaves and young shoots	eaten as vegetable
14.	*Chlorophytum tuberosum*	Liliaceae	Leaves Roots	cooked as vegetable eaten raw
15.	*Cissus quadrangularis*	Vitaceae	Young shoots	eaten as curries
16.	*Cordia dichotoma*	Cordiaceae	Young leaves Fruits	used as vegetable ripe are eaten as vegetable, pick les are prepared from unripe fruits
17.	*Curcuma amada*	Zingiberaceae	Rhizome	used to prepare salad or chutney or eaten raw
18.	*Diospyros melanoxylon*	Ebenaceae	Fruits	ripe fruits are eaten as raw
19.	*Eclipta prostrata*	Asteraceae	Tender leaves	used as vegetable
20.	*Launaea procumbens*	Asteraceae	Leaves	cooked as vegetable
21.	*Leptadenia reticulata*	Asclepiadaceae	Flower	cooked as vegetables

22.	*Madhuca indica*	Sapotaceae	Flowers	eaten as vegetable flowers are dried and powdered by the tribals and then they make chapatis out of it.
23.	*Moringa oleifera*	Moringaceae	Fruits	when unripe are used as veg etable. The fruit known as drum stick is highly suitable with pulses
			Young and tender leaves and flowers	used as vegetable, leaves are eaten as Chutney. Pakodas are prepared by using sehajana leaves
24.	*Nyctanthes arbortristis*	Oleaceae	Flowers	eaten as vegetable either as fresh or as dried one. The taste is pleasant bitter
			Leaves	used in making curry
25.	*Phyllanthus fraternus*	Euphorbiaceae	Tender leaves, shoots along with fruits	eaten raw or cooked as vegetable
26.	*Portulaca oleracea*	Portulacaceae	Tender shoots and leaves	used as vegetable alone or mixed with other vegetables
27.	*Saccharum spontaneum*	Poaceae	Young shoots and rhizomes	eaten as sugarcane, sweet in taste
28.	*Saraca indica*	Caesalpiniaceae	Fruit	chewed as substitute for arecanut
29.	*Solanum nigrum*	Solanaceae	Young leaves	used as mixed vegetable with other vegetables
			Ripe fruits	eaten raw
30.	*Solanum xanthocarpum*	Solanaceae	Fruit	eaten as vegetable
31.	*Thespepsia populnea*	Malvaceae	Young leaves and flower buds	eaten fried
32.	*Tribulus terrestris*	Zygophyllaceae	Whole plant	cooked as vegetable
33.	*Vitex negundo*	Verbenaceae	Tender leaves	used as vegetable
34.	*Xanthium strumarium*	Solanaceae	Saplings, young Shoots and leaves	used as vegetable usually with potato and other vegetables
35.	*Zizyphus mauritiana*	Rhamnaceae	Fruit	eaten fresh. The fruits are sliced or pounded and dried under the sun and preserved for future use. The powdered sour item is used to mix with other curries. Pickles are also prepared with this fruit.

knowledge for a sustainable management of biodiversity.

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