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TRADITIONAL KNOWLEDGE ON WILD EDIBLE PLANTS AS LIVELIHOOD FOOD IN HILLY REGION OF NAINITAL, UTTARAKHAND, INDIA

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ABSTRACT

The aims of this study was documenting the traditional knowledge and assessing the utilization of the wild edible plants used by the local people of Nainital, Uttrakhand. The local people, who will be familiar with traditional uses of the plants, were interviewed for the extraction of folk knowledge. Semi-structured interview, questionnaires, focus group discussion and field observations was carried out to enhance understanding and gather information about traditional knowledge and about different species of wild edible plants available around the village. Total of 9 families, 12 genera with 15 species of wild edible plants were collected in the study area. Most of them are Trees (60%) followed by shrubs and herbs with 27 % and 13% respectively. *Rubus ellipticus and Myrica esculenta* were the most preferred species. Wild edible plants are threatened due to various human and natural causes. Thus, public awareness and community based management is need to be encouraged by at all levels.

KEYWORDS: Wild edible plants, Nainital, Uttarakhand.

INTRODUCTION

Wild edible plants (WEPs) are the species those are neither cultivated nor domesticated but growing wild and are however edible (Beluhan and Ranogajec, 2010). Different wild edible plants have played a significant role in all geographical regions of world throughout human history (Sekeroglu *et al.*, 2006). Poor communities through the world are dependent on these wild plants for their food, nutrition, subsistence needs and improving rural livelihoods as well (Sundriyal *et al.*, 2003; Mishra *et al.*, 2008; Tiwari *et al.*, 2010; Badhani *et al.*, 2011).

Despite the primary reliance of agricultural societies on domesticated plants and animals for food, the tradition of consuming wild plants has not been completely erased. Millions of people, particularly tribal and rural communities in many developing countries still collect and consumed a wide variety of wild plant resources to meet their food requirements (FAO, 2004; Balemie & Kebebew, 2006; Bharucha & Pretty, 2010). Wild sources of food, in general, remain particularly important for the poor and landless, and are especially important during times of famine or conflict when normal food supply mechanisms are disrupted and local or displaced populations have limited access to other kinds of food. Significant work has been done by various workers on ethnobotany of wild edible plants in Kumaun Himalayan region (Upreti et al., 2017; Bohra et al., 2016; Upreti et al., 2010). The role of these edible plant species in maintaining human and environmental health has been reported (Frison et al., 2006; Johns & Eyzaguirre, 2006). Moreover, these plants have played an important role in complementing staple foods to provide a balanced diet by supplying of protein, fat, sugars, trace elements, vitamins, and minerals.

The rapidity with which environmental damage, loss of floristic and cultural diversity occurs today, a necessicity is felt for the recording and documentation of traditional knowledge about the uses of edible plants - knowledge which is widely disappearing. Therefore, there is an urgent necessity to document traditional knowledge, focusing on the maintenance of this important cultural practice. The study can provide a baseline data on the value of such locally produced food source particularly at times of food shortage which may be helpful for prioritization of conservation through sustainable use and management of the resources. In spite of the abundant information on inventories of wild edible taxa, there is a crucial need to understand the way these plants are utilized and how the consumption of such edible plants changed by time and place Additionally, it is important to study such knowledge systems and find innovative ways of infusing them to the future generations.

MATERIALS AND METHODS

The method employed in this study were designed with the purpose of providing baseline information on the use of plant species in local system, through literature survey and field visits to various areas from 2014-2016 in Nainital, Uttarakhand. The selected informants in the sample site were interviewed using semi-structured interview focusing on the WEPs. Full notes on facts and information about the respondents, history of wild food collectors, history of WEPs, and other essential information were recorded on site. A brief group discussion was also made with the informants. During the discussion the informants were free to state about WEPs and their knowledge without being interfered. Voucher specimen of each WEPs species was collected. Live specimens and photographs were shown to local villagers for local identification. The collected plants were identified with the help of specialist (Prof Y.P.S. Pangtey) and available literature (Osmaston, 1927; Hooker, 1875 –2006). The plant specimens were deposited in the Department of Botany, D.S.B. Campus, Kumaun University Nainital.

RESULTS AND DISCUSSION

The present ethnobotanical research study has led to the documentation of 15 plant species from 6 families used as WEPs by the rural communities of Nainital. Their habit wise analysis indicates the trees (60%) made the highest proportion of the edible plant species followed by shrubs (27%) and herbs (13%) in descending order. The plant parts used were leaves, flowers, fruit, bark, root, seed, bark and rhizoids for food supplement. Analysis indicates fruits of 11 (44%), leaves of 7 (28%) and shoots of 2 (8%) plant species as most preferred edible plant parts.

Forest is a common habitat for collection of these plants. Wild food plants species are abundant and diverse in this region. They provide food and nutrients to local people and could also be a source of cash income. The preferred plant species, if documented properly, might be developed as a vital source of income generation as well as nutritional requirements. This type of study could contribute to educate and bring awareness to the young generations as well as urban communities to practice in their daily life about the importance of wild edible plants. These plants can be incorporated in commercial crop plants in future and will tend to minimize food scarcity as well as economy in tribal areas for their livelihood and help in regeneration of barren lands. However, both WEPs and their associated indigenous knowledge are facing various threats. Thus, conservation and sustainable utilization of these plants in this area are of the utmost importance. Documentation of these species may provide basic information for conservation, possibly further.

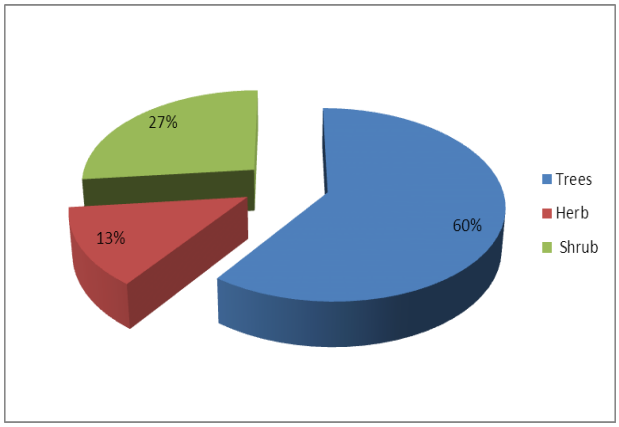

Figure 1: Habit of the plant surveyed.

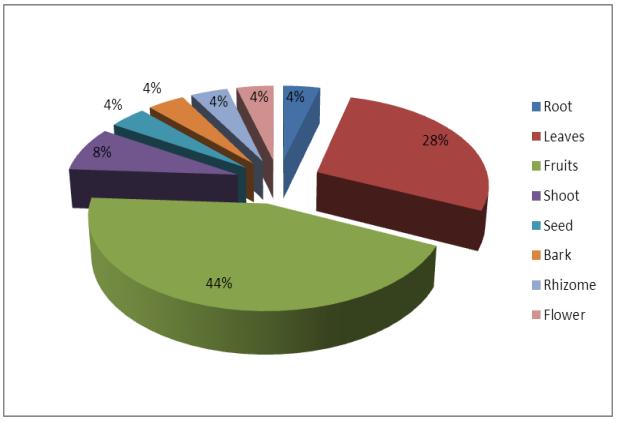

Figure 2: Edible plant parts of surveyed plants.

CONCLUSIONS

The results deal with 15 wild edible plants utilised by the local people of Nainital region of Uttarakhand. These wild edibles having natural taste. The floristic diversity of the study site offers variety in human diet. A list of ethnobotanical use of wild edibles used by the various communities is given (table 1). According to the utilization pattern of the various parts of the plant fruits, shoot and leaves were the extensively used parts.

Indigenous fruits play an important role in the nourishment of rural communities from the very beginning. Mostly the elder people have vast knowledge about these wild plants as food supplements. Moreover, due to over exploitation, the wild flora is declining very sharply. Other than this, unfortunately, the younger generation is also not taking any interest to maintain this traditional knowledge bank, hence resulting in the degradation of folk flora. Wild edible plants are threatened due to various human and natural causes. Thus, public awareness and community based management is need to be encouraged by at all levels.

Table 1: List of wild edible plant species found in hilly region of Nainital.

S. No.	Botanical Name	Family	Habit	Local name	Part/s used	Ethnobotanical Use
1.	*Bauhinia variegata* L.	Caesalpinaceae	T	Kach-nar	Sh, Lf, Sd	Tender shoots, flower buds and leaves are eaten as a vegetable. Leaves are pleasantly acidulous and are often nibbled as relish. Seeds are also edible. Leaves are used for making food plates called pattal and donas (traditional bowls).
2.	*Berberis aristata* Roxb.	Berbaridaceae	T	Kilmora	Fr	Ripened fruits edible.
3.	*Berberis asiatica* Roxb.	Berbaridaceae	S	Kilmora	Rt, Lf, Bk, Fr	Ripened fruits edible.
4.	*Bergenia ciliata* (Haworth) Sternb.	Saxifragaceae	H	Silphar, Silphori	Rh	Locally the warm infusion of rhizome is given to patients of kidney stone. Rhizome paste is applied on boils and given to children in dysentery and vomiting. Young tender shoots and flowers used as edible.
5.	*Castanea sativa* Mill.	Fagaceae	T	Chestnut	Fl, Fr	Fruits edible.
6.	*Ficus auriculata* Lour.	Moraceae	T	Timil	Fr	Fruits edible, unripe fruits made into vegetable.
7.	*Ficus palmata* Forssk. subsp. virgata (Roxb.) Browicz.	Moraceae	T	Bedu	Fr, Lf	Fruits edible. Fruits are either eaten raw with salt or filled inside the bread. fruits medicinal for digestive disorders
8.	*Fragaria vesca* L.	Rosaceae	S	Bhi Kafal	Fr, Lf	Fruits edible.
9.	*Myrica esculenta* Buch.-Ham. ex D.Don	Myricaceae	T	Kaphal, Kaphaw	Fr	Ripened Fruits edible
10.	*Pyracantha crenulata* (D.Don) M.Reom.	Rosaceae	T	Ghingaru	Fr, Lf	Ripened fruits edible.
11.	*Pyrus pashia* Buch-Ham.ex D.Don	Rosaceae	T	Jangli Mehal	Lf	Ripened fruits edible.
12.	*Rubus ellipticus* Sm.	Rosaceae	S	Hisalu	Fr	Ripened fruits edible.
13.	*Rubus niveus* Thunb.	Rosaceae	S	Kala Hisalu	Sh , Fr	Fruits edible
14.	*Terminalia chebula* Retz.	Combretaceae	T	Harar	Fr	Seed kernel is eaten. Fruits are used in Indian Ayurvedic medicine Triphala.
15.	*Urtica parviflora* Roxb.	Urticaceae	H	Bichhu	Lf	Young leaves or twigs are cooked as vegetable.

*Note: Rt - Root, Fr - Fruit, Lf.- Leaf, Rh- Rhizome, Fl.- Flower, Sh-shoot, Bk.- Bark, T - Tree , S - Shrub , H –Herb.

Bauhinia variegata

Berberis aristata

Berberis asiatica

Bergenia ciliata

Castanea sativa

Ficus auriculata

Ficus palmata

Fragaria vesca

Photo plate 1: Photographs of wild edible plants.

Myrica esculenta

Pyracantha crenulata

Pyrus pashia

Rubus niveus

Rubus ellipticus

Terminalia chebula

Urtica parviflora

Photo plate 2: Photographs of wild edible plants.

Documenation of traditional knowledge by local people

Preparation of donas (traditional bowls) from Ficus palmate leaves By a local inhabitant

Photo plate 3.

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