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Documentation and ethnobotanical survey of wild edible plants used by the tribals of Kupwara, J & K, India.

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Abstract

The present study deals with the identification, documentation and ethno-botanical exploration with respect to food value of wild edible plants from selected areas of Kupwara (Budnamel, Keran, Karnah, and Jungand). Total 31 wild edible plants were surveyed. Edible parts of wild plants (fruit, flower, leaves, tubers and rhizomes) are the nature's gift to mankind; these are not only delicious and refreshing but also the chief source of vitamins, minerals and proteins. The wild edible plants are the normal food of cattle grazers and the forest tribes. Although the popularity of these wild forms of fruits, flowers and tubers has declined, it is considered that special attention should be paid to them in order to maintain and improve this important source of food supply.

Keywords: Ethno botany, Edible plants, Kupwara, Tribal's.

1. Introduction

Consuming wild edibles is part of the food habits of people in many societies and intimately connected to virtually all aspects of their socio-cultural, spiritual life and health ^[1]. It also plays a major role in meeting the nutritional requirement of the tribal population in remote parts of the country throughout year ^[2-9]. Wild food plants play a very important role in the livelihoods of rural communities as an integral part of the subsistence strategy of people in many developing countries ^[10]. India is one of the second largest human populations in this planet 75% of the population is living in the rural areas. Most rural communities depend on the wild resources including wild edible plants to meet their food needs in periods of food crises, as well as for additional food supplements ^[11]. It is estimated that in India about 800 species are consumed as food plants, chiefly by the tribal inhabitants ^[12]. Wild plants have since ancient times, played a very important role in human life; they have been used for food, medicines, fiber and other purposes and also as fodder for domestic animals. In search for wild edible food plants many of which are potentially valuable for human being has been identified to maintain a balance between population growth and agricultural productivity, particularly in the developing countries ^[13].

Various publications provided detailed knowledge about the utilization of wild plants as food in specific location around the world. Studied conducted in Africa by Zemedede showed that wild plants are essential components of many African diets, especially in period of seasonal food shortage ^[14]. A study conducted by Wilson in Zimbabwe revealed that some poor household rely on wild fruits as an alternative to cultivated for quarter of all dry seasons meals ^[15]. Paster and Gustavo in their study conducted on wild edibles found that 57 wild edible plants species are consumed, in 118 different ways as a source of food by charote people of Argentina ^[16]. Francesca and Francesca described the importance of 188 wild food plant species used popularly in the Sicily ^[17]. Javier compiled and evaluated the ethnobotanical data available on the wild edible plants traditionally used for human consumption in Spain. A total of 419 wild plant species belonging to 67 families were discussed with respect to the part used, localization, method of consumption and harvesting time. This study showed that the reported wild edibles are the essential components of many Spanish diets especially during various traditional events and fairs ^[18]. Victoria described the cultural, practical and economic value of wild plants by applying a quantitative technique in the Bolivian Amazon and concluded that wild plants play an important role in the daily life of local inhabitants ^[19]. A study conducted by Athena on Paphos and Larnaca country side of Cyprus revealed that inhabitants of these areas subsisted primarily on pastoralism and agriculture and therefore preserves the traditional knowledge on wild edible plants ^[20]. Ana

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and Mariana studied the pattern use and knowledge of wild edible plants in distinct ecological environments, from Northwestern Patagonia and found that knowledge and consumption of wild edible plant follow a pattern according to ecological conditions of gathering environments, as well as the cultural heritage of the Paineo people [21]. Agarhar Murugkar and Subbulakshmi studied the nutritive value of wild edible fruits, berries, nuts, roots and spices consumed by the khasi tribes of India. They concluded that the wild plants eaten by Khasi tribe are a good source of nutrients and considering their low cost and easy availability, need to be popularized and recommended for commercial exploitation [22]. Maikhuri studied the nutritional value of some lesser known wild food plants and their role in tribal nutrition [23]. Rawat reported some common wild fruits of Garhwal Himalaya [24]. Rakesh found that wild edibles are playing an important role in the rural development in the central Himalaya Mountains of India [25]. A study conducted by Debarataon the wild food plants of Midnapore, West Bengal showed that 31 wild edible plant species are frequently consumed during the flood and droughts

[26].

Significant work in the field of ethno botany has been done in past 4-5 decades in the Himalayan state of Jammu and Kashmir by many workers [27-36]. Many papers have been published on the ethno medicinal and economic aspects of plants of this state. Little work has been done on wild edible plants of the state [37-40]. But this is the first report on wild edible plants from this backward and border district Kupwara.

2. Study Area

The Kashmir division has 10 districts, among 10 districts Kupwara is one of the backward and border district .it lies in the north of the Kashmir and located between 34°45 and 75°20 east longitude (fig.1). The district has a total geographical area of 2,379sq Km comprising of 368 villages. As per 2011 censes ,870,354 persons with population density of 366 persons per sq Km .the schedule caste and schedule tribe population of the area comprises of 7.97% .The present study was carried in Budnamel, Keran , Karnah, and Jungand. The languages spoken here are Kashmiri, Pahari, and Gojree.

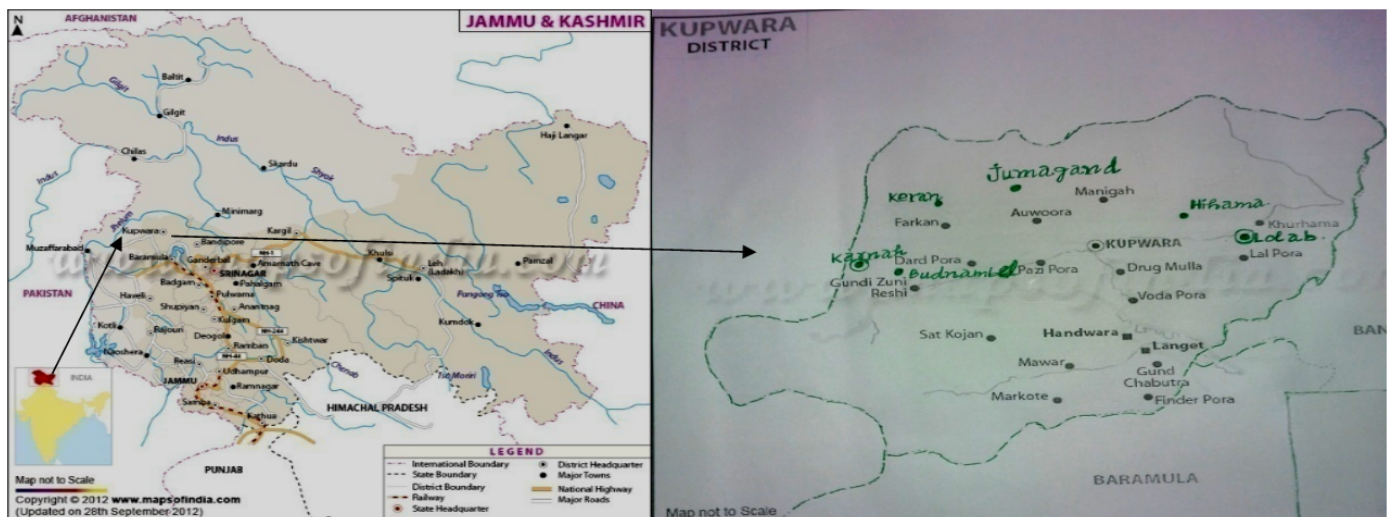


Fig 1: Map of Kupwara showing study area (Budnamel, Keran, Karnah, and Jungand)

3. Materials and Methods

The present study was carried out around the selected areas of Kupwara District (Budnamel, Keran, Karnah, and Jungand) during 2013-2014. The aim of the study was to explore, collect, identify, and preserve the wild and domesticated plants used by tribal's as food. The data were collected from the tribal's through participatory rural appraisal and questionnaire survey. The elder persons, farmers, herdsman, shepherds, housewives, and children were contacted to collect data on uses of plants. Local names, plant part used, method of utilization were gathered from them with regard to each plant. The collected specimens were dried, pressed, poisoned, and mounted on herbarium sheets [41-42]. All collected specimens were identified with the help of available literature [43-45].

4. Results

The study shows that, tribal's of Budnamel, Keran, Karnah,

and Jungand possess a very good knowledge on the wild edible plants around the forest areas. A total of 31 plant species from, 19 families have been recorded as wild edible plants in the study area (Table 1), of which Whole plant recorded ranked first with 12 species, Green Leaves, Fruits, Rhizome, Flowers, Roots, and Seeds ranked next with 10,5,1,1,1,1 respectively (Fig 3). Among the 20 families, the most utilized species belong to Asteraceae (4), Amaranthaceae (3), Polygonaceae (3), and Brassicaceae (3), and the remaining families were represented by one or two species each (Fig 4). In present study about 31 wild edible plants have been enumerated, among them 25 are herbs, 2 shrubs, 2fungus, 1 fern, and 1 tree (Fig5). Out of 31 species, angiosperms comprised the highest number being represented by 28 species followed by fungus2 species and pteridophytes 1species. Dicotyledons were represented by 27 and monocotyledons were represented by only 1 species (Fig 6).

Table 1: Wild edible plants used by the Gujjar and Bakerwal tribals of (Budnabel, Karnah, Keran and Jungand), Kupwara Jammu & Kashmir.

| S NO. | Botanical Name. (Vernacular Name.) | Family | Parts Used | Uses | Habitat | Flowering Period |
|-------|---|----------------|------------|--|---------|--|
| 01 | <i>Amaranthus caudatus</i> L. (Leesa) | Amaranthaceae | WP | Herb is used as a vegetable in study area. | Herb | June-Aug ^[33, 43, 45] |
| 02 | <i>Amaranthus sp.</i> (Wasthalkh) | Amaranthaceae | LE | Used as vegetable in juvenile stage. | Herb | April-Sept ^[33, 43, 44] |
| 03 | <i>Arisaema jacquemontii</i> Blume. (Hapatmakei/Hapetcheor) | Araceae | RH | Used as a vegetable in the juvenile stage. | Herb | May-Sept ^[33, 43, 44] |
| 04 | <i>Asplenium falcatum.</i> (Dade) | Filicinae | LE | The fern is used as vegetable both in fresh condition as well as dried during summer time and eaten in harsh winter. | Fern | [33, 45] |
| 05 | <i>Brassica oleracea.</i> (Hakh) | Brassicaceae | LE | Used as vegetable in the study area. | Herb | April-Sept ^[43, 45] |
| 06 | <i>Calvatia gigantea.</i> (Mangde) | Lycoperdaceae | WP | During the time of April-May, the women of the study area search the fungus from the forests and collect them. After that it is eaten as raw as well as cooked and make vegetable. | Fungus | [33, 44] |
| 07 | <i>Capsella bursa pastoris</i> L. (Kralmund) | Brassicaceae | WP | Used as vegetable in the juvenile stage. | Herb | March-May ^[43, 44] |
| 08 | <i>Chenopodium album</i> Lin. (Buthwa) | Amaranthaceae | WP | Young shoots are used as vegetable. | Herb | June-Oct ^[43, 45] |
| 09 | <i>Cichorium intybus</i> Linn. (Jangle hand/Posh hand) | Asteraceae | WP | Used as vegetable especially by women during pregnancy. | Herb | June-Sept ^[34, 35, 43] |
| 10 | <i>Fragaria nubicola.</i> (Jangli Gonch) | Rosaceae | FR | The fruits are edible. | Herb | June-Oct ^[40, 43, 44, 45] |
| 11 | <i>Jurinea himalaica</i> R.R.Stewart. (Thendi-Jeri) | Asteraceae | R | Uncooked roots are chewed, these become chegum like after chewing. | Herb | July-Sept ^[43, 44] |
| 12 | <i>Malva neglecta</i> L. (Sochal) | Malvaceae | LE | Used as vegetable | Herb | May-July ^[34, 40, 43] |
| 13 | <i>Mentha longifolia</i> L. (Pudina) | Lamiaceae | WP | Shoots are used as vegetable. Also used as Condiment. | Herb | May-Aug ^[33, 35, 44] |
| 14 | <i>Morchella esculenta</i> L. (Guchi) | Morchellaceae | WP | Fruiting body is used as vegetable. | Fungus | [33, 34, 45] |
| 15 | <i>Morus alba</i> L. (Tul) | Moraceae | FR | Fruits are eaten. | Tree | May-Aug ^[34, 44] |
| 16 | <i>Origanum vulgare.</i> (Baber) | Lamiaceae | SE & LE | Leaves are used as vegetable and the seeds as spice. | Herb | June-Sept ^[33, 43] |
| 17 | <i>Plantago lanceolata.</i> (Gul) | Plantaginaceae | LE | Fresh leaves are used as vegetables. | Herb | May-Sept ^[34, 33, 44] |
| 18 | <i>Plantago major.</i> (Bud-gull) | Plantaginaceae | WP | Used as vegetable in juvenile stage. | Herb | May-Sept ^[33, 34, 45] |
| 19 | <i>Podophyllum hexandrum</i> Royle. (Wanwagun) | Berberidaceae | FR | Fruit is edible Red Berry. | Herb | April-June ^[33, 34, 40, 44] |
| 20 | <i>Ranunculus arvensis</i> L. (Churim) | Ranunculaceae | WP | The green part of the plant before flowering is cooked and is used as vegetable. | Herb | April-June ^[34, 43] |
| 21 | <i>Ranunculus muricatus</i> L. (Thul Hakh) | Ranunculaceae | WP | Before flowering the plant is used as vegetable. | Herb | July-Sept ^[34, 44] |
| 22 | <i>Rheum austral</i> D.Don. (Chotail) | Polygonaceae | LE | Vegetable in the study area. | Herb | June –Aug ^[34, 43] |
| 23 | <i>Rheum emodi</i> Wall, ex-Meissn. (Pambchalan) | Polygonaceae | LE | Vegetable in the study area. | Herb | July-Aug ^[33, 43, 45] |

| | | | | | | |
|----|---|-----------------|----|---|-------|-----------------------------------|
| 24 | <i>Rumex acetosa</i> L. (Abjie) | Polygonaceae | WP | Vegetable in juvenile stage. | Herb | May-Aug ^[33, 43, 44] |
| 25 | <i>Saussurea lappa</i> (Kuth) | Asteraceae | LE | Leaves eaten as vegetable. | Herb | July-Sept ^[34, 33, 45] |
| 26 | <i>Solanum nigrum</i> . (Makoi/Cambetamtar) | Solanaceae | FR | Fruits are eaten. | Herb | June-Sept ^[33, 43, 44] |
| 27 | <i>Sisymbrium loeselii</i> Linn (Dand Hakh) | Brassicaceae | WP | Used a vegetable in the study area. | Herb | June-Sept ^[44, 45] |
| 28 | <i>Stellaria media</i> . (Nick hakh) | Caryophyllaceae | WP | The whole plant is used as vegetable at Tender stage. | Herb | April-June ^[43, 45] |
| 29 | <i>Taraxacum officinale</i> Weber (Hand) | Asteraceae | LE | Young leaves are cooked and used as vegetable. | Herb | April-July ^[34, 44] |
| 30 | <i>Viburnum grandiflorum</i> Decene. (Kalmach) | Caprifoliaceae | FR | Fruits are delicious and edible. | Shrub | July-Sept ^[43, 44, 45] |
| 31 | <i>Viola Odorata</i> . (Nun-posh) | Violaceae | FL | Vegetable | Shrub | May-Aug ^[33, 43, 45] |

Abbreviations Used:- WP (whole plant), R (Roots), ST (Stem), LE (Leaves), FL (Flowers),FR(Fruit),TU (Tuber), B (Bulb), RH (Rhizome), SE(Seeds)

5. Discussion

The edible plants have played an important role as a natural source of food for human beings since ages. The extreme cold arid conditions of Budnamel, Keran Karnah, and Jungand enforced the tribal people to depend upon nature for their food, shelter, medicine, fodder, fuel and other necessities of life. The edible plant provides delicious fruits, nutritious leaves and other useful parts like bulbs, roots, seeds, & leaf stalk, etc. for the tribal people especially at the time of scarcity. Documentation of wild edible plants from ethnobotanical approach is important for enhancing the understanding of indigenous knowledge systems. The wild consumption and availability of wild plants attest their value, and are especially visible among indigenous cultures. But in recent times, the old traditional in many tribal communities are at risk and gradually decline, hence there is urgent need to study such knowledge systems and find innovative ways of tapping their potential for the welfare of mankind.



Fig 2 (A&B): Research scholar interviewing a *Gujjar* at Budnamel
(C):- Huts of *Gujjars* and *Bakerwals* at Jungand (Kupwara)



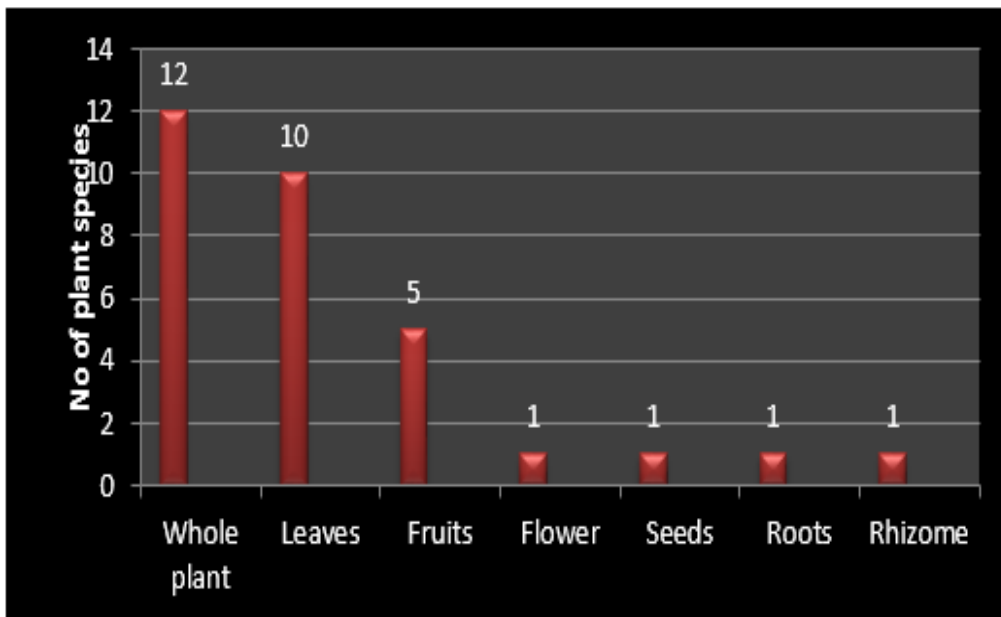


Fig 3: Wild edible plant species in different categories

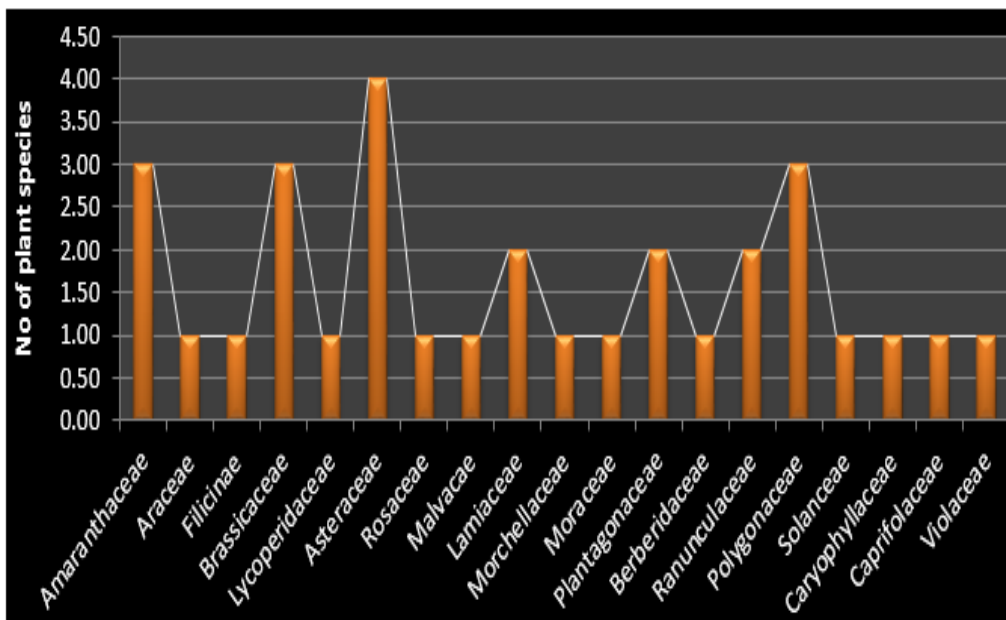


Fig 4: No. of plant species of various families used by people of Kupwara (Budnamel, Keran, Karnah, and Jumgand).

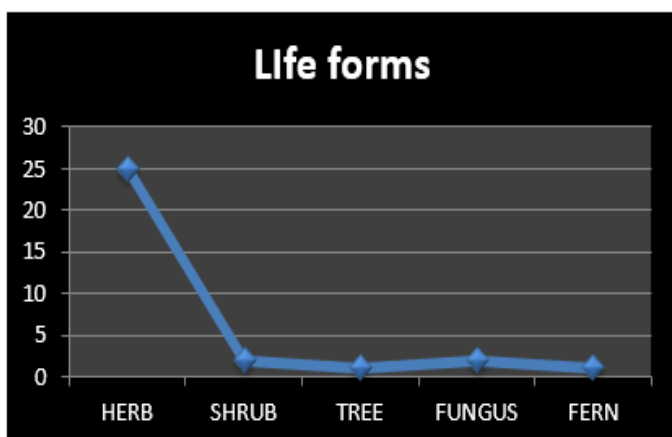


Fig 5: life form of wild edible plant species.

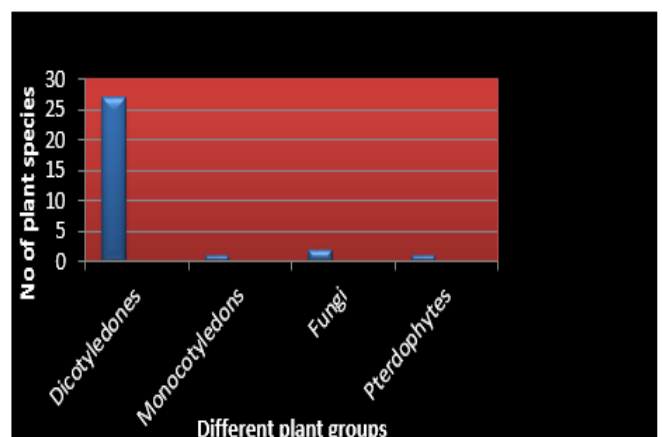


Fig 6: No. of families of different groups.

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