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ETHNOBOTANICAL STUDIES ON DIFFERENT *EDIBLE* WEEDS OF JAISINGHPUR (KANGRA) IN HIMACHAL PRADESH, INDIA

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ABSTRACT:

Plants are the basis of life on earth and are central to people's livelihood. Glimpses of our knowledge in ethnomedicine are available to vedic text. The work aims at the preservation of this depleting traditional knowledge. Agenda 21 of the Rio Earth Summit stated that indigenous people have a vital role in environmental management and development because of their knowledge and traditional practices. This paper deals with ethnobotanical information of 14 edible weeds of Jaisinghpur along with their phonological pattern. Weeds compete with crop plants for water, light and nutrition. They tend to persist in spite of man's effort for eradication and interfere with agricultural operations. Weeds reduce the yield and detract from the comfort of life but some of the weeds are highly medicinal, edible and has great ethnobotanical values. Wild foods are rich source of carbohydrates such as the starch and free sugars, oils, proteins, minerals, ascorbic acid, and the antioxidant phenols, such as chlorogenic acid and its polymers.

KEY WORDS: *Ethnomedicine, Indigenous Traditional knowledge, Biodiversity, Phenological pattern.*

INTRODUCTION:

The term ethnobotany was coined by J.W. Harshberger in 1895 to "the study of plants used by primitive and aboriginal people" (Anonymous, 1895). Since then, the subject has been variously defined and interpreted by different workers as its discipline began to follow multidisciplinary approach combining a diversity of knowledge bases and methods through the use of anthropological methods (Robbins *et al.*,1916; Schultes and Reis,

1995). Plants are the basis of life on earth and are central to people's livelihood. Glimpses of our knowledge in ethnomedicine are available to vedic text (Jain, 1987). Undeniably, there is an inextricable link between indigenous culture and biodiversity as areas of high biodiversity are oftenly found on indigenous community's lands and in their water bodies (Alcorn, 1996). The 15th session of the General Assembly of IUCN held in Christchurch, New Zealand, in October 1991, recognized the importance of the cultural heritage of mankind and the role of traditional cultures in conservation of nature (Mc Neely and Pits, 1998). Agenda 21 of the Rio Earth Summit (1992) stated that indigenous people have a vital role in environmental management and development because of their knowledge and traditional practices. Ethnobotanical information in the form of folklore is passed through generations in certain restricted and remote habitations (Chauhan,1999; Choudhary *et al.*, 2008; Ganesan, 2008; Saini, 1986).

A weed is a plant growing where it is not desired (Klingman and Noordhoff, 1961). Weeds compete with crop plants for water, light and nutrition. They tend to persist inspite of man's effort for eradication and interfere with agricultural operations. Weeds reduce the yield and detract from the comfort of life (Craft and Robbin, 1962). Inspite of all this, some of the weed are highly medicinal, edible and has great ethnobotanical values. These plants provide inexpensive food, thereby extending the very base of our food security system, and also the only ray of hope for more than 500 million people in the world suffering from hunger and malnutrition. Besides, wild foods are rich source of carbohydrates such as the starch and free sugars, oils, proteins, minerals, ascorbic acid, and the antioxidant phenols, such as chlorogenic acid and its polymers (Ali and Deokule, 2009; Ekanayaka and Nair, 1998). No efforts have been made to document information related ethnobotany of edible weeds in the region; however information related to edible weeds and ethnobotany of Himachal Pradesh is scattered (Arora and Pandey, 1996; Bennet *et al.*, 1991; Lal *et al.*, 1996; Rana *et al.*,2005; Roy *et al.*, 1998; Sarin, 1990; Sood *et al.*,2001, 2012); so the present effort has been made.

STUDY AREA:

"Jaisinghpur" (592m), one of the tehsils of district Kangra in Himachal Pradesh has common boundaries with districts Mandi and Hamirpur. The word "Jaisinghpur" is derived from the name of a famous king Raja Jai Singh who supposed to be a great warrior of "Rajgir" dynasty. The town "Jaisighpur" is located on the bank of river "beas" with a population of 1,273 while the population of tehsil is 58,623. Tehsil "Jaisinghpur" is full of natural water resources and is a combination of greenery and water has, thus, given tehsil a distinctive look, located at an altitude between 500-1800m amsl between 31°53′55″N/76°35′58″E latitudes. The area is a combination of the plains and the hills and blessed with remarkable natural beauty and high ranges of Dhauladhar mountains at the backdrop with tops remain snow covered for most part of the year (Balokhra, 2002).

METHODS:

Intensive ethnobotanical exploration were undertaken in some of the rural pockets of Shimla, Kullu, Kangra, Chamba and Mandi districts of Himachal Pradesh in the regions above 2,000m heights. The field tours were planned in such a way so as to collect the ethnobotanically interesting species either in flowering or fruiting stage. Herbarium of collected plants was prepared following Jain and Rao, 1978. For a better understanding of local beliefs, habits and uses of plants, different categories of people like family heads, healers, old experienced and knowledgeable informants, especially old ladies were repeatedly interviewed. Specific questions based upon Proforma designed by Jain & Rao, 1978 were asked and the resultant information was recorded in the ethnobotanical field notebook along with the name of locality and local name. Botanical identification of the selected species was first done with the help of regional floras (Chowdhery and Wadhwa, 1984; Dhiman, 1976; Hooker, 1872-1897).

For more information three basic approaches were adopted following Phondani *et al*.

2010:

- An interview based approach- Questions from informants mainly from old experienced people about edibility of weeds.
- An inventory based approach- An inventory based approach is followed on following questions:
  - Whether whole plant or plant parts are used?
  - The season of flowering and fruiting (Phenological pattern)
  - An interactive discussions approach with communities-

How to use plants for their edibility.

RESULT:

The survey yielded the ethnobotanical information on edible weeds as depicted in Table 1.

DISCUSSION:

The present study yielded the information of the 14 edible weeds from Jaisinghpur. These weeds belong to 8 families out of which Fabaceae with 6 spp and Amaranthaceae with 2 spp are predominant. *Lathyrus* (2spp) and *Vicia* (2spp) are the predominant edible genera of weeds (Table 1). Mostly the leaves and aerial parts of 12 spp are relished as vegetable while the seeds of A*maranthus viridis* and *Lathyrus sativus* are consumed. Tender pods (Fruits) of one plant i.e. Cassia occidentalis are cooked as vegetable. The edible parts of *Boerhavia*, *Chenopodium*, *Portulaca* and *Spergula* are also medicinally important (Table 1). Phenological pattern varies from plant to plant as depicted in Table 2.

CONCLUSION:

All weeds are not noxious and harmful. Some of them are edible and highly medicinal as depicted in study.

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REFERENCES:

Alcorn J. B. 1996. Is biodiversity conserved by indigenous people? In: Ethnobiology in Human Welfare, edited by SK Jain, Deep Publ., New Delhi, 233-238.

Ali, A. and Deokule, S.S. 2009. Studies on nutritional values of some edible plants from Iran & India, *Pak. J. Nutr*. 8: 26-31.

Anonymous 1895. Some new ideas, The plants cultivated by aboriginal people and how used in primitive commerce, *The Daily Evening Telegraph*, Philadelphia, vol. 64, no 134.

Arora, R.K. & Pandey, A. 1996. Wild Edible Plants of India- Diversity, Conservation and Use. NBPGR, New Delhi.

Balokhra, J. M. 2002. The Wonderland Himachal Pradesh, H.G. Publication, New Dehli.

Bennet, S.S.R., Biswas, S., Chandra, V., Singh, P.J., Chandra, S. and Dayal, R. 1991. Food From Forests, Indian Council of Forestry Research and Education, Dehradun, India.

Chauhan N. S. 1999. Medicinal and Aromatic Plants of Himachal Pradesh, Indus Publ. Co., New Delhi .

Choudhary, K, Singh, M and Pillai ,U 2008. Ethnobotanical survey of Rajasthan - An uptade, *Am-Eurasian J. Bot.* 1(2): 38-45.

Chowdhery, H. J. and Wadhwa B. M. (1984). Flora of Himachal Pradesh, Vol. 1-3. Bot. Surv. India, Calcutta.

Craft, A.S., and Robbins, W.W. 1962. Weed Control, McGraw Hill Book Co., Inc, New York (ed. 3 rd).

Dhiman, D. R. 1976. Himachal Pradesh Ki Vanoshdhiya Sampada, Imperial Printing Press, Dharamsala, H.P.

Ekanayaka, E.R. & Nair, B.M. 1998. Proximate composition mineral and amino acid contents of mature Canavalia gladiata seeds, *Food Chem*, 66: 115-119.

Ganesan ,S. 2008. Traditional oral care medicinal plants survey of Tamil Nadu, *Natural Product Radiance*, 7: 166-172.

Hooker, J. D. 1872-1897.The Flora of British India, Vol. I-VIII, Lalit Mohan Basu, Allahabad.

Jain, S .K. and Rao R. R. 1977. A Handbook of Field and Harbarium Methods, Today's & Tomorrow's Printers & Publ., New Delhi.

Jain, S. K. 1987. A Manual of Ethnobotany, Sci. Publ., Jodhpur.

Klingman, G.C. and Noordhoff, L.J. 1961.Weed Control; As A Science. John Wiley & Sons, Inc, New York.

Lal, B., Vats, S.K. Singh, R.D. and Gupta, A. K. 1996. Plants used as ethnomedicine and supplementary food by Gaddis of Himachal Pradesh, India: 384-387. In: Jain, S.K. (ed.) Ethnobiology in Human Welfare, Deep Publ., New Delhi.

McNeely, J.A. & Pit. D 1985 (eds), Culture and Conservation, The Human Dimension in Environmental Planning, Croom Helm, London, New York, Sydney.

Phondani, P. C., Maiknuri, R K., Rawat, L. S., Farooquee, N. A., Kala, C. P.,Vishwakarma, S. C. R., Rao, K. S. and Saxena, K. G. 2010. Ethnobotanical uses of plants among the Bhotiyal tribal communities of Niti valley in Central Himalaya, India, *Ethnobot. Res. & Application* 18:233-244.

Rana, J.C., Sharma, B.D., Sood, S.K., and Lakhanpal, T.N. 2005. Genetic Diversity of Himalaya, Publication No.7. Inst. Int. Himalayan Studies, H.P.U., Shimla (H.P.).

Robbins, W.W, Herrin J. P. and Freire-Marreco B. 1916. Ethnobotany of the Tewa Indians, Bureau of American Ethnology, Bulletin, no 55. Smithsonian Institutions, Washington, D.C.,

Roy, B., Halder, A.C. and Pal, D.C. 1998. Plants For Human Consumption in India, Bot. Surv. India, Calcutta.

Saini, V. K. 1996. Plants in the Welfare of Tribal Women and Children in Certain Areas of Central India In: Ethnobiology in Human Welfare, edited by SK Jain, Deep. Publ., New Delhi, 140-144.

Sarin, Y.K. 1990. Some less known but effective folk remedies in North-West Himalayan region, *Ethnobotany* 2: 39-43.

Schultes, R. E. and Reis S. V. 1995. Ethnobotany - Evolution of a Discipline, Chapman, London.

Sood, S. K., Rawat, D., Rawat, S. and Kumar, S. 2012. A Handbook of Wild Edible Plants, Pointer publishers, Jaipur.

Sood, S.K., Nath, R., and Kalia, D.C. 2001. Ethnobotany of Cold Desert Tribes of Lahaul-Spiti (N.W. Himalaya), Deep Publ., New Delhi.

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TABLE 1. EDIBLE WEEDS OF JAISINGHPUR (KANGRA, HIMACHAL PRADESH)

S. No.	Local Name/s	Botanical Name	Family	Part/s Used	Ethnobotanical Uses
1.	Rubadi-Khubadi	*Alternanthera sessilis* (L.) R. Br. *ex* DC.	Amaranthaceae	Aerial Parts	Pot herb - Aerial parts cooked as vegetable along with leaves of other wild plants and eaten as mixed **"saag"**
2.	Chalairi, Chaulai	*Amaranthus viridis* L.	Amaranthaceae	Aerial Parts, Seeds	Pot herb - Aerial parts used as vegetable along with potato; cooked as vegetable along with leaves of other wild plants and eaten as mixed **"saag"**.
3.	Eat-seat	*Boerhavia diffusa* L.	Nyctaginaceae	Leaves	Pot herb - Aerial parts; cooked as vegetable along with leaves of other wild plants and eaten as mixed **"saag"**; good for "vaata" problem.
4.	Chhota-Rellu	*Cassia occidentalis* L.	Fabaceae	Fruits	Pods cooked as vegetable along with potato
5.	Kanah	*Chenopodium album* L.	Chenopodiaceae	Aerial parts	Pot herb - Aerial parts cooked as vegetable along with leaves of other wild plants and eaten as mixed **"saag"** ;good for "vaata" problem.
6.	Mater-Phali, Khinnu, Sudu	*Lathyrus aphaca* L.	Fabaceae	Aerial parts	Pot herb - Aerial parts cooked as vegetable along with leaves of other wild plants and eaten as mixed **"saag"**
7.	Kalan	*Lathyrus sativus* L.	Fabaceae	Leaves, Seeds	Tender leaves are used in mixed vegetable; seeds are rarely eaten as 'dal'.
8.	Kulfa	*Portulaca oleracea* Hook.	Portulacaceae	Aerial Parts	Pot herb - Aerial parts cooked as vegetable along with leaves of other wild plants and eaten as

S. No.	Local Name/s	Botanical Name	Family	Part/s Used	Ethnobotanical Uses
					mixed **"saag"**and is good for relieving body heat
9.	Changer	*Ranunculus muricatus* L.	Ranunculaceae	Aerial Parts	Pot herb - Aerial parts used as vegetable along with potato; cooked as vegetable along with leaves of other wild plants and eaten as mixed **"saag"**.
10.	Janglee Dhania	*Scandix pecten veneris* L.	Apiaceae	Aerial Parts	Pot herb - Aerial parts used as vegetable along with potato; cooked as vegetable along with leaves of other wild plants and eaten as mixed **"saag"**; also used for flavouring various dishes.
11.	Pyaazi	*Spergula arvensis* L.	Caryophyllaceae	Aerial parts	Pot herb - Aerial parts; cooked as vegetable along with leaves of other wild plants and eaten as mixed **"saag"**; good for "vaata" problem.
12.	Khaukhua	*Stellaria media* (Linn.) Vill.	Caryophyllaceae	Aerial parts	Pot herb - Aerial parts; cooked as vegetable along with leaves of other wild plants and eaten as mixed **"saag".**
13.	Choti-Rodi	*Vicia hirsuta* Koch.	Fabaceae	Aerial parts	Pot herb - Aerial parts; cooked as vegetable along with leaves of other wild plants and eaten as mixed **"saag"**.
14.	Badi-Rodi	*Vicia sativa* L.	Fabaceae	Aerial parts	Pot herb - Aerial parts; cooked as vegetable along with leaves of other wild plants and eaten as mixed **"saag"**.

Phenological pattern of edible weeds is depicted in Table 2.

TABLE 2: TABLE SHOWING THE PHENOLOGICAL PATTERN OF EDIBLE WEEDS OF JAISINGHPUR (KANGRA), HIMACHAL PRADESH (H.P.)

S. No.	*Botanical Name*	*Flowering & Fruiting Season*
1.	*Alternanthera sessilis* (L.) R. Br. *ex* DC.	Throughout the year
2.	*Amaranthus viridis* L.	May – June
3.	*Boerhavia diffusa* L.	June-October
4.	*Cassia occidentalis* L.	May-December
5.	*Chenopodium album* L.	May-October
6.	*Lathyrus aphaca* L.	April-May
7.	*Lathyrus sativus* L.	May-August
8.	*Portulaca oleracea* Hook.	July-August
9.	*Ranunculus muricatus* L.	March-June
10.	*Scandix pecten veneris* L.	May-September
11.	*Spergula arvensis* L.	May-Aug.
12.	*Stellaria media* (Linn.) Vill.	March-April
13.	*Vicia hirsuta* Koch.	March-April
14.	*Vicia sativa* L.	January-February