Recent Research in Science and Technology 2011, 3(12): 58-63
ISSN: 2076-5061
Available Online: http://recent-science.com/

Documentation and ethnobotanical survey of wild edible plants from Kolhapur district

Jadhav V.D. , Mahadkar S. D. and Valvi S. R.

Department of Botany, Shivaji University, Kolhapur-416004, Maharashtra, India.

Abstract

The present study deals with the identification, documentation and ethno-botanical exploration with respect to food value of wild edible plants from Kolhapur district. Total 50 wild edible plants were surveyed. Edible parts of wild plants (fruit, flower, leaves, tubers and inflorescences) are the nature's gift to mankind; these are not only delicious and refreshing but also the chief source of vitamin, minerals and protein. 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: Ethnobotany, wild edible plants, Kolhapur district.

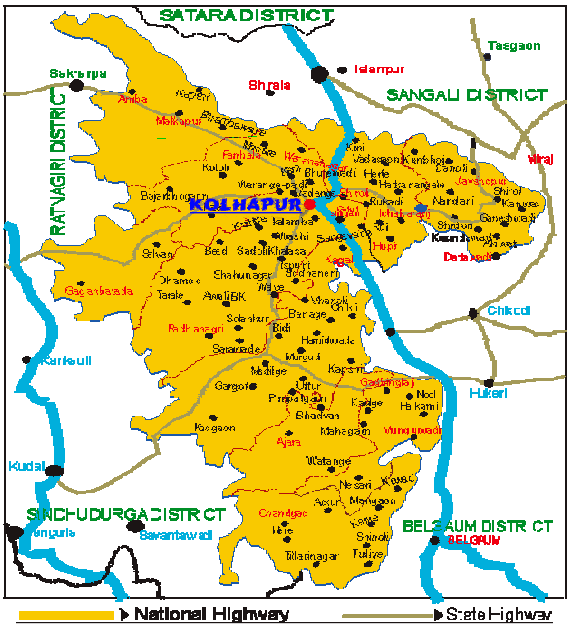
INTRODUCTION

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 (Johns and Kokwaro 1991; Leakey and Newton 1994). Locally available wild valuable genetic resources that can be used for new crop species development. In many parts of the world, wild plants are obtained from forests or wild areas designated for extractive resources and managed by local communities.

Food plants serve as alternatives to staple food during periods of food deficit are a valuable supplement for a nutritionally balanced diet also one of the primary alternative sources of income for many resource poor communities , and the source of species for domestication. (Shrestha1 and Dhillion1, 2006). In this article we contribute to the literature on the relation between knowledge and uses of plants. Previous researchers have identified gaps between knowledge and uses of plants by either using ethnographic and quantitative methods, but with data gathered at the group level (Begossi et al 2002, Phillips 1996, Byg & Balslev 2001, Ladio & Lozada 2004). This research adds to this literature by comparing how individual knowledge of wild and semi-cultivated plants correlates with individual uses of plants.

Study area

Kolhapur is a city situated in the south-west corner of Maharashtra, India, at 16.41°N 74.13°E. It has an elevation of 569 metres (1867 ft). Kolhapur the extreme southern district of Maharashtra state, situated between 17º, 17' to 15º , 43' north latitude and 73º, 40' to 74º , 42º, east longitude entirely in the Panchganga basin encompassing an area of about 7685 sq. kms.(Banthia, 1995-96). As stated in above graph it has various localities which are rich in flora and founa.



METHODOLOGY

Ethnobotanical survey with respect to ethnic food plants was carried out during June 2010 –July 2011. The region was frequently visited. To assess the traditional knowledge on wild edible plants, frequent interactions and discussions were made with the local villagers, which included farmers, herdsmen, shepherds, housewives and children. The indigenous knowledge received from them was noted in special field books. Live specimens and available photographs were shown to them for local identification. The fruits were preserved and identified with the help of available literature. (Hooker 1872 – 1877; Cooke 1967 (Rpr.); Singh and Karthikeyan

Received: Sept 14, 2011; Revised: Nov 17, 2011; Accepted: Dec 27, 2011.

*Corresponding Author

Mahadkar S. D
Department of Botany, Shivaji University, Kolhapur-416004, Maharashtra, India.

Tel:+91-9021070825
Email: mshivprasad007@yahoo.co.in

2000, Singh et al. 2001, Yadav and Sardesai (2002). Further confirmation from department of Botany, Kolhapur.

The information about the wild edible plants given by mentioning there botanical name, family, common name, flowering and fruiting, and their uses. The collected edible plants parts are then dried and preserved for further biochemical analysis. Photographs of some important specimens are taken for further details. Plants were identified using relevant scientific literature and standard floras.

RESULTS AND DISCUSSION

Some wild food plants also have medicinal properties. Such dual roles of wild plants are common in the rural areas (Etkin 2002; Dhillion and Shrestha 2005).

The study in the district revealed that about 50 varieties of plant species of which leaves, flowers, inflorescence, tubers and bulbils are mainly used for consumption . The total 50 species of wild edible plants are collected and stored with detailed information regarding scientific name, common name, purpose of uses for future reference and study depicted in (Table 1). Out of which 12 species belongs to herbs, 27 species belongs to trees, 8 belong to shrub and 2 are climbers.

Table 1. List of some wild edible plants of Kolhapur District and their ethnobotanical information.

Edible plant part- Leaves

Sl. no.	Name of plant species	Family	Vernacular name	Localities in Kolhapur District	Food value	Medicinal Uses
1.	*Cassia tora* L.	Caesalpinaceae	Takala	Kerle, Kolhapur	Leaves used as vegetables.	Leaves and seeds constitute a valuable remedy in skin diseases. Seed powder mix with cow urine make paste and used externally on tumour.
2.	*Trigonella foenum-graecum* L.	Papilionaceae	Methi	Ichalkarangi, Kagal, Kagal, Rui, Kolhapur	Leaves used as vegetables.	Seed roasted powered and given in infusion or weak decoction which is healthy drink useful in dysentery.
3.	*Amaranthus* spinosus L.	Amaranthaceae	Kate-math	Alate, Majale, Talandage.	Leaves used as vegetables.	Leaves powder mix with honey is used as a cooling application. Root used against snake bite.
4.	*Celosia argentia* L.	Amaranthaceae	Kurdu	Bastawade, Dattawad, Dindewadi, Kolhapur Hatkanagale,	Leaves used as vegetables.	Root ash is used as a antidode for snake bite. Root powder smeared with honey and apply for skin infection.
5.	*Portulaca oleracea* L.	Portulacaceae	Ghol	Gneshwadi, Ichalkarangi, Kolhapur, Kurundwad, Shirol, Warananagar.	Whole plant used as a vegetable and has cooling effect.	Leaves used in swellings and bruises and as a poultice for abscesses and boils, Plant juice used for treating earache and toothache.
6.	*Portulaca quadrifida* L.	Portulacaceae	Ranghol	Ichalkarangi, Kolhapur, Shirol, Wadgaon.	Whole plant used as a vegetable and has cooling effect.	Leaves used in swellings and bruises and as a poultice for abscesses and boils, Plant juice used for treating earache and toothache.
7.	*Basella alba* L.	Basellaceae	Mayalu	Ichalkarangi, Kolhapur.	Leaves used as vegetables.	Leaves pulp is applied to boils, ulcers. Leaf juice is mixed with butter and is used for burns. The mucilaginous liquid obtained from the leaves and tender stalks of plants is popular remedy for headaches.
8.	*Chenopodium album* L.	Chenopodiaceae	Chakwat	Sajani, Tilwani.	Leaves used as vegetables.	Oil obtained by steam distilling seeds with seam or water is used to expel hookworms.
9	*Calophyllum apetalum* Willd.	Clusiaceae	Bobi, Irai.	Patgaon, Tambychiwadi.	Leaves used as vegetables.	The leaves are soaked in water are applied to inflamed eyes.

Edible plant part- Flowers

10.	*Bauhinia variegata* L.	Caesalpinaceae	Kanchan	Ichalkarangi, Kolhapur, Warnanagar.	Flowers used as vegetables.	Dried buds useful in diarrhoea and in worms as well as an piles and dysentery.
11.	*Bombax ceiba* L.	Bombacaceae	Katesavar	Dajipur, Ghotawade, Karanphen, Kolhapur, Ichalkarangi, Radhanagari.	Leaves used as vegetables.	The dry flowers with poppy seeds, goat milk and sugar are boiled and inspissated and this two drachms are given three times in a day in haemorrhoids.
12.	*Cassia fistula* L.	Caesalpinaceae	Bahava	Amba, Barki, Chandgad, Dajipur, Gaganbavda, Kagal,	Flowers used as vegetables.	The pulp of pod is a mild laxative, safe for children and pregnant women. Flowers in

				Kolhapur, Shelap.		decoction are given in stomach affection.
13.	*Cassia auriculata* L.	Caesalpinaceae	Tarwad	Alate, Baju Jamal, Bahubali, Chipari, Tarewadi.	Flowers used as vegetables.	Flower powder mix with honey or decoction given in urine diseases and diabetes.
14.	*Madhuca longifolia* (Koen.)Mac.	Sapotaceae	Moha	Tarewadi, Talandage. Katyaani.	Flowers used as vegetables.	Decoction of flowers is useful in cough. The flowers mixed with milk are useful in importance due to general debility.

Edible plant part- Tuber and Bulbils

15.	*Dioscorea alata* L.	Dioscoriaceae	Dukkar-kand	Kagal, Kolhapur	Tubers & bulbils used as vegetables.	Tuber powder used is useful in piles, burning and eye diseases.
16.	*Dioscorea bulbifera* L.	Dioscoriaceae	Dukkar-kand	Amba, Anuskura, Dajipur, Gargoti, Gotawade, Katyaani, Radhanagari.	Flowers used as vegetables.	Tuber powder mix with butter is given to check diarrhoea. The roasted tuber mix with ghee and sugar candy are reputed remedy for piles.
17.	*Amorphophallus commutatus* (Schott)Engl.inDc.	Araceae	Suran	Radhanagari,	Rhizomes are used as vegetable.	Rhizome used in piles. Rhizome boiled with water and wash with water and it is useful in mouth diseases.
18.	*Asparagus racemosus* Willd. Var. *Javanica*	Liliaceae	Shatavari	Gaganbavda. Dajipur, Babul Jamal hill, Katyaani, Radhanagari, Bhahubali.	Tuber eaten as a vegetables.	The root is boiled in milk and milk is administered to relive bilious dyspepsia and diarrhoea and promote appetite.
19.	*Curculigo orchioides* Gaertn.	Kali-musali.	Hypoxidaceae	Amba, Barki, Dajipur, Radhanagari,Gaganbavda, Kolhapur.	Tuber eaten as a vegetables.	Tubers cut and shed dry in that add equal amount of sugar and one glass milk mix well to make thick mucilage, this mixture is used in asthma, jaundice and diarrhoea .

Edible plant part- Fruits

20.	*Momordica dioeca* Roxb.ex Willd.	Cucurbitaceae	Kartoli	Amba, Dajipur, Patgaon, Gotawade, Panhala.	Fruit used as vegetables.	Tubers used in treatment of piles. Male tuber powder applied in the form of paste to ulcers caused by snake bite.
21.	*Trichosanthes tricuspidata* Lour.Fl.	Cucurbitaceae	Kaundal	Barki, Bandiwade, Dajipur, Patgaon, Panhala.	Fruit used as vegetables.	Fruit is smoked in asthma. It is used as fumigatory in ozena and other discharges from the nose. Fruit is well ground in coconut oil and boiled and is remedy for ear-ache.
22.	*Semicarpus anacardium* L.	Anacardaceae	Bibba	Alate, Babu-Jamal, Kolhapur, Nesari, Uttur, Gadhinglaj, Bhatkanagale.	Thalamus is edible.	Single nut is heated in the flame of lamp and oil allowed is divided in four part. one part is mix with a 50 ml milk .This doses given daily in cough caused by the relaxation of ulva and palate.
23.	Spondias pinnata (L.f.)Kurz.,	Anacardaceae	Ambada, Ranambada	Kneriwadi, Panhala,	Fruit is edible, made into pickles. Leaves are used in preparation of chutney.	Juice of leaves is applied locally in earache.
24.	*Canavalia gladiata (Jacq) Dc.*	Papilionaceae	Abai, Ghevada	Hupari, Karadaga, Konoli, Rendal, Sangwade, Yelgud.	Fruits are used in chutneys and pickles.	The root is ground in cow urine and administered internally for consecutive days is said to cure enlargement of liver.
25.	*Grewia tiliifolia* Vahl, Symb.	Tiliaceae	Dhaman	Panhala, Radhanagari, Shelap.	Fruits are edible.	Bark is rubbed down with water and this mucilage strained from it, is given half glass doses as a remedy for dysentery.
26.	*Sterculia foetida* L.	Sterculiaceae	Jangali Badam, Rai	Ichalkarangi, Kolhapur	Seeds eaten after roasting.	Kernel oil used as a fumigatory and also used in skin diseases
27.	*Artocarpus lakoocha* Roxb.	Moraceae	Otamb, Lowi	Tillari.	Fruits are edible.	Milk juice of the fruit mixed with vinegar and applied to glandular swelling. The leaves are considered as antidote to snake poison.
28.	*Ficus recemosa* L.	Moraceae	Umber	All over district.	Fruits are edible.	Seed powder mix with honey is said to be a specific in diabetes, reduces sugar in the urine.

29.	*Streblus asper* Lour.Fl.Cochinch.	Moraceae		Babu-Jamal, Ajara.	Fruits are edible.	Seeds are beneficial in piles, diarrhoea. Externally they applied as paste in leucoderma.
30.	*Phyllanthus reticulatus* Poir. In Lam.	Euphorbiaceae	Datwan, Kanguni.	All over district.	Fruits are edible.	Leaf juice mixed with camphor and cudeds is dissolved in mouth as a remedy for spongy and bleeding gums.
31.	*Emblica officinalis Gaertn. Fruct.*	Euphorbiaceae	Awala	Bhatwadi, Amba, Shelap, Dajipur, Chandgad,	Fruits are edible.	Fresh fruit is used as vermifuge. The mixture of fruit juice and sugar relives burning in vagina. Fruit powder and red sandal is given with honey to stop nausea and vomiting
32.	*Cordia dichotoma* Foret.f.	Boraginaceae	Bhokar	Ajara, Gavase, Lakudwadi, Kolhapur, Panhala.	Fruit is edible, made into pickles.	Fruit mucilage is highly esteemed in cough, in diseases of chest, ulcers and urethra.
33.	*Terminalia bellirica* (Gaertn)Roxb.	Combretaceae	Behada	Ajara, Kolhapur, Babul Jamal, Borpadale, Devale, Kande, Korochi.	Fruits are edible.	The unripe fruit is purgative. The unripe fruit is astringent and is employed in dropsy, piles and diarrhoea.
34.	*Terminalia chebula* Retz.	Combretaceae	Hirda	Ajara, Tillari, Barbet, Chandgad, Dajipur, Gajapur, Gaganbavda, Manoli.	Fruits are edible.	Bala hirade is highly useful in chronic diarrhoea and dysentery.
35.	*Aegle marmelos (L.)Corr.*	Rutaceae	Bel	Ajara, Alate, Ichalkarangi, Hupari, Ramling, Sangawade, Dattawad.	Fruit pulp is edible.	The fruit is sweet, aromatic and cooling, sherbet made with water or syrup. It is pleasantly laxative and a good simple cure for dyspepsia.
36.	*Alangium salvifolium* (L.f.)wang,Engl.	Alangiaceae	Ankul	Bidri, Waghbil	Pulp of fruit is edible.	Root bark is rubbed in rice water it is given with little honey in diarrhoea. The fruit is useful in burning of body.
37.	*Anacardium occidentalae* L.	Anacardaceae	Kaju	Amba, Chandgad, Nesari, Gadhinglaj, Halkarni, Tillari, Murgud, Sangavade.	Nuts are edible.	The oil obtained from pericarp is effective preventive against white ants . The fruit is eaten and is remedy for scurvy. Kernel oil is antidote for irritant poisons.
38.	*Annona squamosa L.*	Annonaceae	Sitaphal	Ichalkarangi, Kagal, Panhala, Tillari, Kurundwad, Warnanagar.	Fruits are edible.	The leaves made in to a paste without adding water are applied to unhealthy ulcers. Fruit pulp of ripe fruit is employed in preparing cooling drink in fevers.
39.	*Artocarpus heterophyllus* Lam.	Moraceae	Phanas	Amba, Anuskura, Malkapur, Tudye.	Fruits are edible.	Milk juice of fruit mix with vinegar and applied for glandular swellings. The tender leaves and root are useful in skin diseases. Decoction of the root is given in diarrhoea.
40.	*Azadirachta indica* Juss.	Meliaceae.	Kadu-nimb.	Alas, Bubnal, Dattawad, Gandhingalaj, Ganeshwadi, Kagal, Kurundwad, Murgud.	Fruits are edible.	Dried berries immersed in whisky have been employed against tape worm etc. The seeds are used in rheumatism.
41.	*Buchanania cochinchinensis* (Lour.) Almeida	Anacardaceae	Char	Babu-Jamal, Adur, Gadhinglaj, Kowad, Nesari, Tarewadi.	Fruits are edible.	The fruit is sweet and laxative. The seed is palatable and nutritious when roasted.
42.	*Capparis spinosa* L.	Capparaceae	Kalavari.	Madilage, Suleran.	Fruits are edible.	The juice of fresh fruit is dropped in to the ear to kill worms.
43.	*Capparis deciduas* (Forssk.)Edgew.	Capparaceae	Nepti karli.	Aurwad, narsimhwadi.	Fruits are edible.	Fruit powder is externally applied to malignant ulcers.
44.	*Canthium coromandelium* (N.Burm.)Alst.	Rubiaceae	Karbit	Kolhapur, Babu Jamal, Bahubali, Nandre.	Fruits are edible.	The leaves ground into paste with water is applied to the forehead for headache in fevers.
45.	*Carissa carandus* L.Mant.	Apocynaceae	Karvand	Borpade Waghbil.	Fruits are edible.	The juice of ripe fruits, mixed with sugar and cardamoms is a cooling drink in biliousness.
46.	*Celastrus paniculatus* Willd.	Celastraceae	Mal-Kangoni.	Patgaon, Suleran, Tillari, Babu Jamal Dhangarmola, Panhala. Anuskura.	Fruits are edible.	Decoction of seeds is given in rheumatism. Mixing of one part of seed oil and 8 parts of butter for application to head. Is known as brain cleaner.
47.	*Erythrina variegata* L.	Papilionaceae	Pangara.	Alas, Bubnal, Chipari, Dattwad, Ghosarwad,	Fruits are edible.	Leaf juice mixed with caster oil is given for cure of dysentery.

				Kolhapur, Sangwade.		Fresh leaf juice with few drops of honey added is good vermifuge.
48.	*Ficus racemosa* L.	Moraceae	Umbar	All over district.	Fruits are edible.	In diarrhea fruit with honey is given. Fruit powder is mix with honey is given in diabetes.
49.	Garcinia indica (Thou.) Chois.	Clusiaceae	Ratamba.	Amba, Dajipur, Kagal, Patgaon, Tillari.	Fruits are edible.	One part seed oil mix with four part of milk is good remedy against dysentery and mucus diarrhoea.

Edible plant part- Inflorescence

50.	*Agave americana* L.	Agavaceae	Kektad	Chandur, Ingali, Kodoli, Rui, Wasagde.	Inflorescence are edible.	The gum exuding from leaves and root is used as a cure for toothache.

CONCLUSION

Above plant have dual significance firstly they are promising future food and secondly these medicinal plants can have some active constituents for future phytochemical analysis. Wild food plants represent inexpensive, locally available nutrition health quality. Useful wild plants are found all over the world, many of the world plants also contribute to herbal medicines which form an important part of the culture and tradition of India. Further research is carried out for analysis of their nutritional and medicinal values.

REFERENCES

[1] Aberoumand, A. and Deokule, S. S. 2008. Studies on nutritional value of some wild edible plants from Iran and India; *Pak. J. Nutr.* 8(1): 26-31.

[2] Barua, S., Hore U., D.K. and Sarma, R. 2000. Wild edible plants of Majuli Island and Darrang district of Assam; *Int. J. Trad. Knowledge.* 6(1): 191-194.

[3] Basu, R. 1996. Food plants of the tribe,'Paharias' of Purulia; *Ad. Plant Sci.* 9(2): 209-210.

[4] Begossi A, Hanazaki N, Tamashiro J. 2002. Medicinal plants in the Atlantic Forest (Brazil): knowledge, use, and conservation. *Human Ecology* 30(3):281-99.

[5] Bhogaonkar Prabha Y.,Vishal R.Marathe and Prachi P.Kshirsagar . 2010. Documentation of Wild Edible Plants of Melghat forest, Dist. Amravati, Maharashtra State, India; *Ethanobotanical Leaflets*. 14:51-58

[6] Byg A, Balslev H. 2001. Traditional knowledge of Dypsis fibrosa (Aracaceae) in Eastern Madagascar. *Economic Botany* 55(2):263-75.

[7] Cooke T. 1967 (Rpr.). The Flora of the Presidency of Bombay. Vol. I, II, III. Botanical Survey of India. Culcutta.

[8] Etkin N.L. 2002. Local knowledge of biotic diversity and its conservation in rural Hausaland, Northern Nigeria. *Econ. Bot.* 56(1): 73–88.

[9] Figueiredo GM, Leitao-Filho H, Begossi A. 1997. Ethnobotany of Atlantic Forest Coastal Communities: Diversity of Plant Uses at Sepetiba Bay (SE Brazil). *Human Ecology* .25(2):353-60.

[10] Ghate, V.S. and Salunkhe R.J. 2007. Nutraceutical potential of *Flacourtia Montana* Grah; 17.Annual Conf. IAAT and International Seminar on Changing Scenario in Angiosperm Systematics, Kolhapur 149-150.

[11] Ghirardini, M.P., Carli, M., Vecchio, N.D., Rovati, A., Cova, O., Valigi, F. And Agnetti, G. 2007. The importance of a taste. A comparative study on wild food plant consumption in twenty-one local communities in Italy. *J.Ethnobio.Ethnomed*.: 3-22.

[12] Jain S. K. 1963. Wild Plant-Foods of the Tribals of Bastar (Madhya Pradesh);B.S.I. 30 B, (2) :56-80.

[13] Kalra Ekta K. 2003. Nutracetical- Defination and introduction. *AAPS Pharm; Sci.* 5(3): 1-2.

[14] Kalita Dilip and Deb Bikash 2006. Folk medicines for some diseases prevalent in Lakhimpur disrict of Brahmaputra valley, Assam; *Nat. Pro. Radi.*5(4):319-322.

[15] Kamble S.Y., .Patil S.R , Sawant P.S., Sawant Sangita, Pawar S.G. and Sigh E.A.2010. Studies on plants used in traditional medicine by Bhilla tribe of Maharashtra; *Ind. J. Trad. Know.* 9(3):591-598.

[16] Ladio A, Lozada M. 2004. Patterns of use and knowledge of wild edible plants in distinct ecological environments: a case study of a Mapuche community from northwestern Patagonia. *Biodiversity and Conservation* 13(6):1153-73

[17] Mahekar, P.D. and Yadav, S.R. 2006. Medicinal Plant of South Western Maharashtra, *Biodiversity of India:* 75-99.

[18] Mao. A. A., Hynnicwta T. M. and Sanjappa M. 2008. Plant Wealth Northeast India with reference to ethnobotany; Ind. *J.Trad. Know.* 8(1):96-103.

[19] Pal S.K. 2004. Medicinal Plants used by Meche People of Jhapa district, Estern Nepal. *Our Nature* 2:27-32.

[20] Phillips O. 1996. Some quantitative methods for analyzing ethnobotanical knowledge. In Selected guidelines for ethnobotanical research: a field manual., ed. M. Alexiades.

[21] Pusphangadan, 2000. Functional food, Medicinal Food and Nutraceuticals Approach to Health care in 21st century; Environ News –News letter of ISEB, India.

[22] Radhakrishnan, K., Pandurangan, A.G. and Pushpangadan, P. 1996. Ethnobotany of Wild edible plants of Kerala, India. Ethnobio. In Hum. Welfare, Deep Publications, New Delhi: 48-51.

[23] Rajasab A. H. and Isaq Mahamad 2004. Documentation of folk knowledge on edible wild Plants of North Karnataka; *Ind. J. Trad. Know.* 3(4):419-429.

[24] Rashid Abdul, Anand V.K. and Serwar Jawaid (2008): Less known Wild Edible Plants used by the Gujjar Tribe of District

Rajouri, Jammu and Kashmir State, India; *Int. J.Bot.*4(2): 219-224.

[25] Rossato SVC, Leitao-Filho H, Begossi A. 1999. Ethnobotany of Caicaras of the Atlantic Forest Coast (Brazil). *Economic Botany* 53(4):387-95

[26] Hooker J. D. 1872 – 1997. The Flora of British India. Vol. I – VII. London.

[27] Sahu, T.R. 1996. Life support promising food plants among Aboriginals of Bastar(M.P.) India. Ethnobio. Hum. Welfare, Deep Pub. 26-30.

[28] Shrestha1, P. M. and Dhillion1, S. S. 2006. Diversity and traditional knowledge concerning wild food species in a locally managed forest in Nepal. *Agroforestry Systems* 66:55–63.

[29] Singh N. P. and Karthikeyan S. 2000. "Flora of Maharashtra State – Dicotyledones" Vol. I. Botanical Survey of India. Calcutta.

[30] Singh N. P., Lakshminarasimhan, P., Karthikeyan, S. and Prasanna P.V. 2001. "Flora of Maharashtra State – Dicotyledones" Vol. II. Botanical Survey of India, Calcutta.

[31] Upadhyay, A., Mitra, N.G., Sachidanand, B. 1998. Mineral nutrient composition in cultivars of *Vicia faba* relative to *Glycine max*; *Ad. Plant Sci.* 11(1): 147-152.

[32] Yadav, S. R .and Sardesai M. M.2002. Flora of Kolhapur District Pub. Shivaji uni. Kolhapur.

[33] Yesodharan K. and Sujana K.A. 2006. Wild edible plants traditionally used by the tribes in the Parambikulam Wildlife Sanctuary, Kerala, India; *Nat. Pro. Radi,* 6(1):74-80.