

Wild Edible Plants Used By the Tribes of Akole Tahasil of Ahmednagar District (Ms), India

Khyade M. S.^{1*}, Kolhe S. R.¹ and Deshmukh B.S.²

Post Graduate Department of Botany,

¹S. N.Arts, D.J. M.Commerce and B.N. S. Science College, Sangamner, Dist. Ahmednagar-422 605 (MS), India

²Arts, Comm. and D. R. Science College Akole, Dist. Ahmednagar- 422601 (MS), India

*Correspondent author, E mail- mskhyade@rediffmail.com

Issued: October 01, 2009

Abstract

The present communication deals with the ethnobotanical exploration, identification, concerns and future potentialities of the wild edible plant species consumed by the tribal communities inhabiting in the hilly areas of akole tahasil of Ahmednagar district fall in Maharashtra state-India. A total of 31 plant species belonging to 23 families were reported from the study area. Amaranthaceae was the dominant family with 4 taxa, while Papilionaceae followed with 3 taxa. Asclepidaceae and Bignoniaceae represented by 2 taxa each. The four major life forms were climbers, herbs, shrubs and trees. Herb makes up the highest proportion of the edible species followed by trees, shrubs and climbers. The plant species are divided into two class-vegetables and raw. Also the present finding support further investigation into nutritional profits, pharmacological prospects and conservational studies.

Introduction

Since the time immemorial, useful plants have been handled by human societies for medicinal and food purposes. While, the hunter-gatherer societies still continue to profess such lifestyles. Throughout history, wild edible plants have sustained human populations in each of the inhabited continents. Human consumption of wild plants has been documented from antiquity into the Common Era. Dietary use of wild fruits, nuts, seeds, and leaves appear in numerous records from ancient Egypt [Darby *et al.* 1977], Greece [Athenaeus, 1927-1942], Rome [Apicius, 1958], India [Caraka, 1981], China [Simoons, 1991] and the Medieval era [Arano, 1976]. 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 [Prescott-Allen and Prescott, 1990; Scherrer *et al.* 2005; Bussmann *et al.* 2006; Bussman and Sharon, 2006; Kunwar *et al.* 2006; Cavender, 2006; Pieroni *et al.* 2007] Many publications have emphasized on the diversity and value of wild edible plants [Maikhuri *et al.*, 2000; Kala, 2007; Dhyani *et al.* 2007]. The nutritional value of traditional wild plants is higher than several known common vegetables and fruits [Nordeide *et al.* 1996; Sundriyal and Sundriyal, 2001; Oreh *et al.* 2007].

The Western Ghats of Maharashtra covers an area of 52,000 km² [Natarajan and Paulsen, 2000]. Ahmednagar district is one of the ten district of Western Ghats region. This district covers an area of 17,035km² and lies between 73°9' to 75°5' E and 18°2' to 19°9' N. The area under study, hamlets/villages and the market places of Akole tahasil that run parallel to the western coast, called Sahyadris. Forest is of moist deciduous type including some evergreen patches. The tribal population in the tahasil of this district is relatively large. The area is occupied by large numbers of tribe's viz. Mahadev-koli, Thakars, Bhils and Ramoshies. They speak dialects of the Marathi language. Their major occupation is agriculture. Rice, black sesame and Finger millet are some of the crops they cultivate. The forest resource plays an important role in the livelihood of these communities. Significant work on the field of ethnobotany has been done in past years in the study area [Petkar *et al*, 2002; Wable and Petkar, 2005; Khyade *et al*, 2008]. Although much has documented on the ethnomedicinal and floristic aspects of plants of this district, however there is not even a single concrete report about the wild edible plant resources of akole Tahasil. Keeping this in view, the present study was conducted as the first ever attempt from the region to explore and identify the wild edible plant resources, to record the indigenous traditional knowledge of utilization.

Materials and Methods

Description of the Study Area and Survey:

The study area concentrates in and around the forest areas, different villages and market places of Akole tahasil located in Ahmednagar district of Maharashtra state, situated in the Sahydris ranges of Western Ghats. Several field trips were undertaken around the villages and different market places of Akole tahasil, during 2007 to 2009. At each time of visit, different tribal hamlets and forest pockets were chosen in different seasons to collect more information; also different market places of villages were visited. The information was procured after discussions with several tribal persons, village head, elder women and other local informants.

Interviews with tribal and village people

The data were collected according to the methodology suggested by Jain (1995). The ethnobotanical data (local name, mode of preparation) were collected through questionnaire, interviews and discussions among the tribal people in their local language. The questionnaire, such as part of the plant used and detailed about mode of preparation and form of usage. Most of the time, the field visits with the tribals are made to observe and collect the edible plant species. Voucher specimen of each edible plants species were collected during the field visits. The collected species were then dried and preserved following the technique [Jain and Rao, 1967]. The specimens were identified using fresh as well as herbarium materials with taxonomic keys in the Floras like Flora of Bombay Presidency [Cook 1901-1908]. Flora of Ahmednagar district [Pradhan and Singh, 1999], Flora of Maharashtra state vol.I [Singh and Karthikeyan 2000], vol. II [Singh et al 2000] and vol. III [Sharma et al 2000], were used to ascertain the nomenclature and deposited at P.G. Department of Botany Sangamner College Sangamner.

Results and Discussion

The present investigation comprises 31 species of plants belonging to 23 families. Out of 23 families 5 families were belongs to monocotyledon and remaining 18 families were dicotyledons. In dicot, the dominant families were

Amaranthaceae (4 species), Papilionaceae (3 species), Boraginaceae (2 species), Asclepedaceae (2 species), where as in monocots, Araceae (2 species) and remaining taxa belongs to one member of each families. For each species botanical name, family, local name, parts used and methods of preparation were discussed in detail (Table 1).

Table 1. Wild edible plants used by the tribes of akole tahasil.

Botanical name	Family	Local name	Parts used	Preparations (administrations)
<i>Agave Americana</i> L.	Agavaceae	Ghyapat	Flowers	Flowers are cooked as vegetables.
<i>Amaranthus biltum</i> L.	Amaranthaceae	Tandulja	Leaf	Leaves are cooked as vegetables.
<i>Amaranthus spinosus</i> L.	Amaranthaceae	Kate math	Leaf	Leaves are cooked as vegetables along with ingredients.
<i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson.	Amaryllidaceae	Suran	Tuber	Tubers are cooked as vegetables.
<i>Arisaema murrayi</i> (Grah.) Hook.	Araceae	Badada	Tuber	Boiled tubers are eaten also as raw.
<i>Bauhinia racemosa</i> Lamk.	Caesalpinaceae	Shid	Flower, leaf	Flowers and leaves are cooked as vegetables.
<i>Bomax ceiba</i> L.	Bombacaceae	Kate-saver	Flower	Flowers are cooked as vegetables.
<i>Cajanus lineatus</i> Wight. & Arn.) Vander.	Fabaceae	Ran-tur	Fruit	Fruits are eaten as raw.
<i>Capparies zeylanica</i> L.	Capparaceae	Waghathi	Fruit	Immature fruit is cooked as vegetable.
<i>Caralluma adscendens</i> R.Br.	Asclepidaceae	Makaadsing or Shindamakad	Shoots/Stem	Shoots are cooked as vegetables, also eaten as raw.
<i>Casine glauca</i>	Celastraceae	Kanguni	Fruits	Ripe fruits are eaten as raw.
<i>Celotia argentea</i> L.	Amaraanthaceae	Kurdu	Leaf	Leaves and twigs are cooked as vegetable.
<i>Chlorophytu tuberosum</i> (Roxb.) Baker.	Liliaceae.	Kuli / Kolu	Leaf,root	Leaves are cooked as vegetable; also roots eaten as a raw.
<i>Colocasia esculenta</i> (L.) Schott.	Araceae	Tera/Alu	Leaf, root	Leaves are cooked as vegetable, also root eaten as raw.
<i>Cordia dichotoma</i> Forst.f.	Boraginaceae	Bhoker	Flower	Flower
<i>Cordia gharaf</i> (Forsk.) Ethrnb. & Asch.	Boraginaceae	Gondani	Fruits	Ripe fruits are eaten as raw.
<i>Digera muricata</i> (L.) Mart.	Amaranthaceae	Kundursa	Leaf, twig	Leaves and twigs are cooked as vegetable.

<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	Kadu-kand	Tuber	Boiled tuber is eaten also fresh eaten as raw.
<i>Diospyros melanoxylon</i> Roxb.	Ebenaceae	Temburni	Fruit	Ripe fruits are eaten as raw.
<i>Elaeagnus conferata</i> Rosb.	Elaeagnaceae	Ambgul	Fruits	Ripe fruits are eaten as raw.
<i>Ensete superbum</i> (Roxb.) Cheesm.	Musaeae	Bankel/Rankel	Inflorescence	Whole inflorescence is cooked as vegetable.
<i>Flacourtia latitolia</i> Burm.f.	Fabaceae	Tambat	Fruit	Ripe fruits are eaten as raw.
<i>Grevia villosa</i>	Tiliaceae	Kharmate	Fruits	Ripe fruits are eaten as raw.
<i>Launaea procumbens</i> L.	Asteraceae	Pathari	Leaf	Leaves are cooked as vegetable.
<i>Leptadenia reticulate</i> (Retz.) Wight. & Arn.	Asclepiadaceae	Hirandodi	Flower	Flower is cooked as vegetables.
<i>Momordica dioica</i> Roxb.ex.Willd	Cucurbitaceae	Kartoli	Fruit	Fruits are cooked as vegetables.
<i>Moringa oleifera</i> Gaertn.	Moringaceae	Shevga	Flower	Flowers are cooked as vegetables.
<i>Portulaca oleracea</i> L.	Portulacaceae	Mhotighol	Whole plant	Whole plant is cooked as vegetable.
<i>Solanum anguivi</i> Lamk.	Solananeae	Ranvangi	Fruit	Fruits are cooked as vegetable.
<i>Tribulus terrestris</i> L.	Zygophyllaceae	Sarata	Whole plant	Whole plant is cooked as vegetable.
<i>Uraria pcta</i> (Jacq.)Desv,ex.DC.	Papilionaceae	Pithwan	Fruits	Ripe fruits are eaten as raw.

The plant parts used were leaves, fruits, tuber, flower and sometime whole plants for food supplements. Herbs make up the highest preparation of the edible species followed by tree, shrub and climber in descending order. The time and frequency of harvesting various from plant to plant depending upon the availability of edible plant or part which in turn vary from place to place. The edible plant species consumed in many ways, some of them need only washing of the parts or no washing. The parts used were fruits, leaves, flower, tubers and sometimes whole plant. Method of preparation and uses falls into categories like boiled, baking and as raw.

During the survey, it was revealed that the tribals and villagers of Akole have much faith in using the wild plants as a food. The indigenous people of study area are dependent on forests food for their daily live hood. They frequently visit forests to collect their necessary food supplements and other materials. Thus, those people have described the wild food plant based on usage into two classes- *vegetables* and *raw food*. The vegetable plant materials are used for cooking, and the raw food is directly eaten after washing.

The leaves of *Amaranthus biltum*, *Amaranthus spinosus*, *Argyreia nervosa*, *Bauhinia racemosa*, *Celotia argentea*, *Chlorophytum tuberosum*, *Colocasia esculenta*, *Digera muricata* and *Launaea procumbens* are mostly used as vegetables for cooking. Moreover species like *Arisaema murrayi*, *Amorphophallus paeoniifolius*, *Chlorophytum*

tuberosum and *Dioscorea bulbifera* bears a tuber which provides hefty minerals and also most of them having medicinal importance. The fruits of *Cajanus lineatus*, *Casine glauca*, *Capparies zeylanica*, *Cordia dichotoma*, *Cordia gharaf*, *Diospyros melanoxylon*, *Elaeagnus conferata*, *Grevia villosa*, *Flacourtia latitolia*, and *Uraria picta* are generally eaten as raw and sometimes salads and prickles are prepared from them.

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. Therefore, steps are needed to undertake extensive education about their importance as a nutritional balanced food as a direct and indirect source of income particularly for the resources poor family. These may bring to light one or other new food plants from wild resources for increased population of our country.

Conclusion

In the present investigation an attempt has been made to catalogue the local knowledge of wild plants used by tribal and villagers of Akole. Also this study contributes to the database of traditional indigenous knowledge of plants of the country, which have been not been documented earlier. 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 knowledge for a sustainable management of biodiversity.

Acknowledgment:

The authors are grateful to Dr. K. K. Deshmukh, Principal Sangamner College, Sangamner. Thanks are also due to the informants of tribal people of Akole tahasil for their help and co-operation during the entire study and field work.

References

- Apicius, (1958). The Roman Cookery Book. A critical Translation of the Art of Cooking, for use in the study and the Kitchen [B Flower and E Resenbaun, translator], George G. Harrap. London.
- Athenaeus, (1927). The Deipnosophists [Cb Gulick, translator], G.P. Putnam's Sons.
- Billore, K.V. and Hemadri, K. (1969). Observation on the flora of Harishchandragarh, sahyadri range, Maharashtra. *Bull. Bot. Surv. India*, 11 335-346.
- Bussman, R.W., Sharon, D. (2006). Traditional medicinal plant use in Northern Peru: tracking two thousand years of healing culture. *J. of Ethno. Ethnomed.* 2:47.
- Bussmann, R.W., Gilbreath, G.G., Solio, J., Lutura, M., Lutuluo, R., Kunguru, K., Wood, N., Mathenge, S.G. (2006). Plant use of the Maasai of Sekenani Valley, Maasai Mara, Kenya. *J. Ethn. Ethnomed.* 2:22.
- Caraka, (1981). Caraka Samhita. Agnivesa's Treatise Refined and Annotated by Craka and Redacted by Drdhabala, vol.1 Sitrasthana to Indryasthana. [P Sharma editor], Chaukambha Orientalis, Delhi.

- Cavender, A. (2006). Folk medicinal uses of plant foods in southern Appalachia, United States. *J. Ethnopharmacol.*, 108:74-84.
- Cooke, T. (1901-1908). The flora of the Presidency of Bombay, London 2 Vol. (Repr. Ed. 1958. 3 vol Govt of India).
- Darby, W.J., Ghalioungui, P. and Grivetti, L.E. (1977). Food: The Gift of Osiris, Academic Press, London.
- Dhyani, D., Maikhuri, R.K., Rao, K.S., Kumar, L., Purohit, V.K., Sundriyal, M. and Saxena, K.G. (2007). Basic nutritional attributes of Hippophae rhamnoides (sea buckthorn) populations from Uttarakhand Himalaya, India. *Current Science*, 92:1148-1152.
- Jain, S.K. (1995). A manual of Ethnobotany, 2nd edn. Scientific publishers, Jodhpur, India.
- Jain, S.K. and Rao, R.R. (1967). A handbook of field and herbarium methods, Today and Tomorrow Printers and Polishers, New Delhi, 33-58.
- Kala, C.P. (2007). Prioritization of cultivated and wild edibles by local people in the Uttaranchal hills of Indian Himalaya. *Indian Journal of Traditional Knowledge*, 6:239-243.
- Khyade, M.S., Wani, P.S., Awsarkar, U.D. and Petkar, A.S. (2008). Ethnomedicinal Plants used in the treatment of Toothache by Tribals of Akole, Ahmednagar (MS). *Enrich Environment*. 1 (3) 76-80.
- Kunwar, R.M., Nepal, B.K., Kshhetri, H.B., Rai, S.K., and Bussmann, R.W. (2006). Ethnomedicine in Himalaya: a case study from Dolpa, Humla, Jumla and Mustang districts of Nepal. *J. Ethno. Ethnomed*, 2:27.
- Maikhuri, R.K., Nautiyal, S., Rao, K.S. and Semwal, R.L. (2000). Indigenous knowledge of medicinal plants and wild edibles among three tribal sub communities of the central Himalayas, India. *Indigenous Knowledge and Development Monitor*, 8:7-13.
- Natarajan, B., Paulsen, B.S. (2000). An Ethnopharmacological Study from Thane District, Maharashtra, India: Traditional Knowledge Compared With Modern Biological Science. *Pharmaceutical Biology*, 38: 139–151.
- Nordeide, M.B., Hatloy, A., Folling, M., Lied, E., Oshoug, A. (1996). Nutrient composition and nutritional importance of green leaves and wild foods in an agricultural district, Koutiala, in Southern Mali. *Int J Food Sci Nutr*. 47(6):455-468.
- Orech, F.O., Aagaard-Hansen, J. and Friis, H. (2007). Ethnoecology of traditional leafy vegetables of the Luo people of Bondo district, western Kenya. *Int. J. Food Sci. Nutr.*, 58(7):522-530.
- Petkar, A.S., Wabale, A.S., Shinde, M.C. (2002). Some Ethnomedicinal Plants in the tribal areas of Akole and Sangamner talukas of Ahmednagar District (M.S) *J. Ind. Bot. Soc.*, 81: 213-215.
- Pieroni, A., Houlihan, L., Ansari, N., Hussain, B., Aslam, S. (2007). Medicinal perceptions of vegetables traditionally consumed by south-Asian migrants living in Bradford, Northern England. *J. Ethnopharmacol.*, 113:100-110.
- Pradhan, S.G., Singh, N.P. (1999). Flora of Ahmednagar District (M.S) Bishen Singh Mahendra Pal Singh, Dehradun. India.
- Prescott-Allen, O.C., Prescott-Allen, R. (1990). How many plants feed the world? *Conservation Biology*, 4:365-374.
- Scherrer, A.M., Motti, R. and Weckerle, C.S. (2005). Traditional plant use in the areas of Monte Vesole and Ascea, Cilento National Park (Campania, Southern Italy). *J. Ethnopharmacol.*, 97:129-143.

- Sharma, B.D., Karthikeyan, S., Singh, N.P. (1996). Flora of Maharashtra State– Monocotyledons. Botanical Survey of India (BSI), Calcutta, India.
- Simoons, F.J. (1991). Food in China. A Cultural and Historical Inquiry. , CRC Press, Boca Raton. Arano, L. C. (1976). Tacuinum Sanitatis. The Medieval Health Handbook. New York. NY George Braziller.
- Singh, N.P., Karthikeyan, S. (2000). Flora of Maharashtra State–Dicotyledons, Vol. I, Botanical Survey of India (BSI), Calcutta, India.
- Singh, N.P., Lakshminarasimhan, P., Karthikeyan, S., Prasanna, P.V. (2001). Flora of Maharashtra State– Dicotyledons, Vol. II, Botanical Survey of India (BSI), Calcutta, India.
- Sundriyal, M., Sundriyal, R.C. (2001). Wild edible plants of the Sikkim Himalaya: Nutritive values of selected species. *Economic Botany*, 55:377-390.
- Wabale, A.S. and Petkar, A.S. (2005). Ethnomedicinal Plants Used Against Jaundice by the Tribals of Akole Taluka (M.S) *J. Phytol. Res.* 18 (2): 259-261.