

Wild edible plant of vidarbha: Nutritive values of *chlorophytum tuberosum* (Roxb.) Baker

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Abstract

Wild edible plants form an important constituent of traditional diets in Vidarbha. In total of 125 wild species documented 16 have been screened for their nutritional values out of which *Chlorophytum tuberosum* is selected for present study. Among different plant parts, generally higher nutrient concentration was recorded for leaves. Fresh as well as shade dried material was used for estimation of moisture content, chlorophyll, anthocyanin, lycopene, vitamin-C, vitamin-A, crude fibre, lipid, fat, reducing and non-reducing sugar, total soluble sugar, starch, total nitrogen and phenols. Mineral content was estimated in terms of ash yield and further analysis was carried out for qualitative and quantitative estimation of different elements. Among the various macronutrients estimated in the plant samples of different wild edible species, many were present in highest quantity. Micronutrients, such as iron, zinc, magnesium, and copper contents were analyzed in different plant parts of various wild edible species. The iron content was higher in leaves and new shoots. The nutritive values of certain wild edible species determined in this study are comparable with various commercial vegetables. It is suggested that a few wild edible species need to be grown for commercial cultivation and adopted in the traditional agro forestry systems, which will lead to reduced pressure on them in natural forest stands as well as producing economic benefits for poor farmers.

Keywords: wild edible plants, nutritive value, macro and micro analysis

1. Introduction

Wide range of wild edible plants is available in this region. Rural folk consumes wild edibles in different ways, either raw or cooked. It is necessary to evaluate the nutritional values of such wild food. Species selected here for study is *Chlorophytum tuberosum* commonly found throughout Maharashtra. It is also found in Rajasthan, Gujarat, Madhya Pradesh, Bihar, Orissa and West Bengal extending into Peninsular India up to an altitude of 1,350 m ^[1]. Usually leaves and tubers are used as food. Tubers are collected during July-August. Leaves were found to be used widely in Vidarbha region. It's an herb, leaves linear lanceolate, undulate acute. It shows branching near top and flowers are densely arranged in attractive white perianth. Root fibers are slender and ending in tubers. Commonly it is known as safed musali. Young leaves used as vegetable in Amravati, Nagpur, Washim and Gadchiroli. Young leaves cooked in vegetable supposed to be highly nutritious ^[2]. Medicinally tubers and roots are important they are used on joint pains, urine problems and as tonic ^[3].

2. Material and Methods

Plants were brought to laboratory, thoroughly washed and shade dried. For analysis fresh material was preserved at 4 °C, while dry powder was made of shade dried plants. For nutritional evaluation moisture content, crude fiber, total carbohydrates, starch, reducing and non-reducing sugars, total nitrogen, total phenols were quantitatively estimated ^[4, 5]. For evaluation of medicinal properties, plant tissue was tested qualitatively for the cardenolides, flavonoids, leucoanthocyanins, simple phenolics, polyoses, polyuronoids and anthracene glycosides ^[6-10]. Plant ash was prepared to estimate the mineral content (in the form of salts) and further qualitative analysis was done to detect various minerals like sulphur, calcium, magnesium, iron, sodium, chloride, phosphorus, aluminum, copper and nickel. Phosphorus and iron were estimated quantitatively by spectrophotometer; whereas, potassium, calcium and sodium were estimated quantitatively by flame photometer ^[7, 11, 12].

3. Observations

Certain specialized processes of recipes are followed in practice for the preparation of vegetable. Leaves are first washed and boiled in water for few minutes and water is drained. Chopped onion is cooked in oil till brownish with chilly and turmeric powder, add cut leaves and mix properly, add salt as per taste and steam cook. Nutritional evaluation shows following figures-

Moisture Content-87.3%, Total Lipids-0.5 gm, Total Carbohydrates -3.05 gm, Starch-0.506 gm, Reducing Sugar-1.075 gm, Non-Reducing Sugar-1.455gm, Protein (N×6.25)-18.9 gm, Crude Fat-3.4 gm, Total Phenols-82.16 mg, Crude Fibre-49.9 gm, Food energy K cal.-118.4. Ascorbic Acid (Vitamin-C)-4.316 mg, Anthocyanin-1.096 mg, Lycopene-4.9 mg, Carotenoids-126 mg. Calcium-1.095 gm. Minerals which are estimated quantitatively are Potassium-0.76 gm, Sodium-3.034 gm, Phosphorus-0.114 gm, Iron-0.1136 gm. Qualitative analysis of minerals shows results as Sulphur-++, Calcium-++, Magnesium-+, Iron-+++, Sodium-++, Chloride-+, Phosphorus-+++, Aluminum-+, Manganese-++. Whereas + means weak, +- means moderate, +++ means presence of satisfactory minerals. Study of bioactive elements shows presence of Pyrogallol and polyoses.

4. Result and Discussion

Nutraceutical potential of the wild edibles studied here is discussed in light of the role of nutrient components and bioactive molecules they contain, and the medicinal uses mentioned in earlier literature. Most of the wild edibles especially leaves are available in rainy season. The material for analysis therefore was collected in the same season and at the same stage, which is preferred by people. Moisture content is good and other nutritional values are also found

quite satisfactory. Dietary fibers, that plays very important role in health promotion and disease prevention. Crude fiber estimated here constitutes insoluble dietary fiber which adsorbs bile salts, it also facilitates intestinal movements. Leaves of *C. tuberosum* were found to contain high amount of

dietary/crude fibre (49.9% of dry tissue). Leaves of *C. tuberosum* show presence of pyrogallol, steroids, fatty acids and polyoses. Tuberos roots of the species are well known for giving vigour and vitality. Presence of steroids and polyoses make the leaves also vigour imparting.

Comparison Table- Nutrients value mg per 100gm

Table 1

Name of the plant	Moist	Protein N*6.25	Fat	Crude fibre	Carbo hydrate	Vit C	β-Carotene (µg/100gm)
* <i>Amaranthus spinosus</i>	85	3.0	0.3	1.1	7.0	33	NA
* <i>Fenugreek Leaves</i>	86	4.4	0.9	1.1	6.0	52	9,100
* <i>Spinac</i>	92.1		0.7	0.6	2.9	28	2,740
* <i>Cabbage</i>	91.9	2.0	0.1	1.0	4.6	124	NA
<i>Chlorophytum tuberosum</i>	87.3	0.543	0.435	6.387	0.324	4.316	126000

*Values are from Gopalan *et al.* [13]

People often have a negative attitude towards these vegetables and fail to appreciate their taste. Promoting the nutritional value of traditional leafy vegetables will have a good impact on encouraging their use. After comparing with conventional vegetables, it's showing almost satisfactory result.

5. Conclusion

In-depth survey of wild edibles is necessary; not only to know such species and their recipes. The bulk of useful tropical biodiversity is under exploited and is one of the glaring over side of area of food and nutrition. The creation of more crops and the support of new croppers are of global importance. *Chlorophytum tuberosum* can grow well in all environmental condition and with this satisfactory nutritional values and medicinal uses one should promote it as agriculture crop for vegetable. Integration of wild edible species into agriculture system will not only protect biological diversity but also provide adequate food and contribution to the rural economy.

6. References

- Anonymous-1948. The Wealth of India – raw materials. Council of Scientific and Industrial Research. New Delhi. 2003; 1(I).
- Anonymous. Ethnobiology in India- A status Report. Ministry of Environmental and Forest Government of India, New Delhi, 1994.
- Dongarwar NM. Ethnobotanical studies on the Tribals of Jalgaon District of Maharashtra State. India. Journal of the Botanical Society. 2004; 39:30-137.
- Sadasivam S, Manikam A, Biochemical Methods. IInd Edition. New Age International (P) Limited, London, 2005.
- Thimmaiah SR. Standard Methods of Biochemical Analysis, Kalyani Publishers. New Delhi, 1999.
- Chabra SC, Ulso FC, Mshin EN. Phytochemical Screening of Tanzanian Medicinal Plants. J. Eth. Pharma. 1984; 11:151-179.
- Evans WC. Trease and Evans Pharmacognosy. 14th edition. W.B. Saunders Company Limited, Singapore, 1997.
- Harborne JB. Phytochemical Methods. Chapman and Hall Limited, London, 1973.
- Kokate CK, Purohit AP, Gokhale SB. Pharmacognosy. Nirali Prakashan, Pune, 1998.
- Kulkarni PH, Apte BK. Reasearch Methdology for students of Ayurveda. Ayurveda Research Institute, Pune, 2000.
- Gupta AK, Varshney ML. (IInd Edn). Practical Manual on Agricultural Chemistry. Kalyani publishers, New Delhi, 1997.
- Peach K, Tracey MV. Modern Methods Of plants analysis (Rep. Edn.) Vol. I-VII, Narosa Publication, New Delhi, 1979.
- Gopalan C, Sastri BVR, Balasubramanian SC. (Received) and updated by Narashima Rao B.S., Y.G Deosthale and K.C. Pant.(Rpr.) Nutritive value of Indian Council of Medical Research, Hyderabad, 2004.