



Research Paper

USES OF *Dioscorea* L. SPECIES WITH SPECIAL REFERENCE TO FOOD AND MEDICINE BY KOKNI TRIBE OF NASIK AND DHULE DISTRICTS OF MAHARASHTRA

Sachin Dadaji Kuvar

Department of Botany,
Siddharth College of Arts, Science & Commerce,
Fort, Mumbai,
India.

Abstract

Wild edible tuber species are an important source of food in India and have a significant place in the dietary habits of small and marginal farm families and forest-dwelling communities during periods of food scarcity. Edible tubers not only enrich the diet of the people but also possess medicinal properties. The diversity in wild species offers variety in the diet and contributes to household food security. India holds rich genetic diversity in tropical root and tuber crops, particularly aroids, yams and several minor tuber crops. Indigenous knowledge on wild tubers is an integral part of the traditional and sociocultural lives of people in India. The tribal people identify and collect wild tubers from the forests and developed a range of processing methods in accordance to their needs. Now, however, this knowledge is being lost as a result of the spread of modern technologies in tribal areas. A harmonious blend of indigenous knowledge with modern science is essential to promote sustainable development and utilization of wild edible tubers. The genus *Dioscorea* L. belonging to the family Dioscoreaceae, commonly known as yam, comprises of about 600 species distributed throughout the world, but mostly in tropical region. The members of the genus *Dioscorea* L. are one of the oldest tubers harvested from wild throughout the world and constitute one of the major food items for many ethnic groups. The present paper deals with 07 species occurring in Nasik and Dhule districts of Maharashtra which have been used as a source of food and to cure certain ailments by Kokni tribal community of these districts.

Key words: Food, Medicine, *Dioscorea*, Kokni, Maharashtra.

INTRODUCTION

Since the ancient times human beings have been using plants more particularly as a source of food and medicine. They also studied the available plant material and

distinguished between poisonous and non-poisonous plants i.e. whether they are edible or non-edible through trial and error methods. By the same time by knowingly or unknowingly they also get the benefits from the plants while using them as food and medicine. Importances of plants as sources of drug or medicine are due to the presence of some chemical substance or substances in their tissues. In the beginning drug plants were used as such or the drugs were prepared in the crude form as paste, decoction, etc. But with the progress of science and technology, the active principles of several plants have been isolated for use. Different ethnic groups have been using several species of *Dioscorea* L. in their area of habitations as a source of food due to its high starch content & calorie value and also to cure certain ailments. Most of the species of *Dioscorea* L. have a wide adaptability to diverse agro climatic condition. [1]

Dioscorea L. species is considered as a famine food and plays a prime role in the food habit of small and marginal forest-dwelling communities during the food scarcity periods. It is recognized as the fourth most important tuber crop after potatoes, cassava, and sweet potatoes and contributes about 10% of the total root and tubers production around the world. *Dioscorea* tubers have nutritional advantage over other root crops. It contains good source of essential dietary supplements such as protein, well balanced essential amino acids, and many dietary minerals. *Dioscorea* L. species are the monocotyledonous tuber crops under family Dioscoraceae and the genus includes more than 600 different species worldwide. Most of the species are unique for their food, medicinal and economic value. There is an enormous diversity in the wild and domesticated species that are being used by tribal communities as traditional food. However, systematic characterization of food quality traits in wild species is a major prerequisite for mass consumption and cultivation. [2]

Yams, undoubtedly are one of the potential plant resources being used both as food and medicine. *Dioscorea* L. has been an important source of food for various tribal communities and serves as a dietary staple for poor people in several areas. In addition to carbohydrates, fats, fibres and proteins, the plant possesses an ample amount of mineral nutrients including sodium, potassium, phosphorus, calcium, copper, magnesium, iron and manganese. Nutritional value of yams makes them a potential source of food being used by several indigenous groups of people living in local areas.

Several medicinally important chemical constituents form a major portion of the plant rendering it as one of the most valuable drug yielding plants. [3]

MATERIALS AND METHODS

The ethnobotanical survey was carried out during the year 2017 to 2019 in different Kokni tribal villages of Nasik and Dhule districts of Maharashtra. During the field study the plant samples of *Dioscorea* L. species were collected from different villages and the uses were noted down. The digital images of the plants were taken and plant specimens were collected for proper authentication and preparation of herbarium sheets. The plant specimens were identified with Flora of Maharashtra Vol. 5 A [4]. The fresh specimens were compared with the earlier collected herbaria for authentication in Blatter herbarium, St. Xavier's College (Autonomous), Mumbai, Maharashtra. The Global position systems (GPS co-ordinates) of the collected samples were also recorded for further reference.

RESULTS

***Dioscorea alata* L.**

Tubers large; solitary. Leaves simple, opposite, acuminate, usually 5 nerved. Male flowers rarely produced, when present in spikes on leafless branches. Female flowers in spikes longer than leaves, rarely produced. Capsules reddish brown. Found as escape around field and river bank.

Fl. & Fr. : August

Local name: Lal Goichi

Uses: Bulbils are cut and applied on hair during bath to remove lice by the tribal. Tuber are soaked in water over night or kept in river to remove bitterness and used as vegetable. Tuber are dried and crushed to powder and applied on piles to reduce inflammation.

***Dioscorea belophylla* L.**

Perennial, trailing or twining, unarmed herbs. Leaves sagittate, ovate, glabrous, sides of basal sinus straight. Male flowers in spikes on leafless branches. Capsule with short stipe, seeds winged.

Fl. & Fr. : August to January

Local name: Kadua kand

Uses: Leaves are crushed and the extracted juice is administered orally for 7 days to cure Jaundice. Tuber are kept in running water overnight, then boiled and eaten by the tribal.

***Dioscorea bulbifera* L.**

Stout, climbers; tubers solitary, globose to pyriform with long roots produced above it; bulbils warted. Leaves alternate, broadly ovate-cordate. Inflorescence axillary, pendulous spikes. Capsules reflexed, wings rounded at both ends. Fairly common along the edges of the forests.

Fl. & Fr. : July to October.

Local name: Kadukand

Uses: Tuber and bulbils are eaten by the tribal. Tubers are crushed and the paste is applied on stomach to cure abdominal pain. Juice extracted from leaves is given to cure cough and cold.

***Dioscorea hispida* Dennst.**

Tubers depressed-globose, often lobed; roots produced above the tuber. Leaves alternate, leaflets ovate oblong or elliptic oblong, hairy and glandular beneath. Flowers greenish yellow; male flowers in dense paniculate spikes, female flowers in elongate, simple, solitary spikes. Fairly common along the edges of the forests.

Fl. & Fr. : August to December.

Local name: Vaskand

Uses: Thin layer of tuber is applied on stomach to clear the bowel and wounds. Tubers are eaten by the tribal.

***Dioscorea oppositifolia* L.**

Slender twiners. Leaves alternate to opposite, glabrous, coriaceous, elliptic-oblong, elliptic-lanceolate or elliptic obovate. Male flowers in dense, shortly pedunculated spikes upto 5 cm long; female spikes axillary, drooping. Occasionally in hilly slopes.

Fl. & Fr. : August to December

Local name : Adavi

Uses: Roots are crushed with boiled egg and tied with clean cloth on fractured part. Tuber is heated, crushed and hot paste is applied on swelling and joint pain. Leaves and tubers are cooked and used as vegetable by the tribal.

***Dioscorea pentaphylla* L.**

Tubers usually simple. Leaves alternate, leaflets elliptic lanceolate, ovate or obovate. Flowers white or greenish white. Male flowers in racemes towards branch endings, female flowers in pendulous spikes. Occasionally in hilly slopes.

Fl.& Fr. : July to December.

Local name: Ulashi

Uses: The bulbs are cooked and eaten by the tribal. The leaves, flowers and fruits are used as vegetable. Inflorescence is collected on large scale and sold in market by tribal people. The paste of the tuber is applied to reduce swellings, abdominal pain and increase immunity.

***Dioscorea wallichii* Hook.f.**

Twining, prickly towards base. Leaves alternate, glabrous, dark green and shining above, paler beneath. Male panicles long, axillary or on leafless branches, female in decurved slender spikes. Capsules rounded along margins, wing truncate above and below, seeds with a brown wing all round.

Fl.& Fr. : September to December.

Local name: Chaichamur, Kadukanda

Uses: The tubers are boiled, cooked and used as vegetable. Paste of tuber is applied on stomach and back to reduce abdominal pain.

DISCUSSION

Tubers and root crops are important so far as their uses are concerned. Tuber crops are cultivated by tribals and poor farmers from time immemorial. Among the tuberous wild edible and medicines plant, *Dioscorea* L. species are economically important. The plant parts are quite useful in treatment of different types of diseases and disorders due to the presence of a number of bioactive compounds. [5]

The practice of treating various diseases using plant parts can be easily traced back to prehistoric times. This increasing knowledge of tribal practitioners from generation to generation transferred into the main stream and has emerged as traditional medicine system. They use different parts of the plants in wide range of form such as the plant parts in different forms such as paste, juice, decoction, powder, ash, diffusion, etc. in crude form to cure ailments. The healing properties of aromatic and medicinal plants are due to the presence some biochemical (bioactive) compounds. Hence the bioactive compound present in *Dioscorea* species has therapeutic and medicinal values. A good combination of indigenous knowledge is essential to document and promote the utilization of such bioresources available in these particular districts.

ACKNOWLEDGEMENT

The author is thankful to the Principal and Management, Siddharth College of Arts, Science and Commerce, Mumbai for providing necessary facilities. Author is thankful to Shri Rajendra Chaure, Shri Arjun Bagul, Shri Krishna Bhoje and Shri Ramdas Deshmukh, the Kokni informant, for providing information about *Dioscorea* L. species. The author is thankful to Mr. Pravin Kale from Blatter Herbarium, St. Xavier's College (Autonomous), Mumbai for authentication of plants.

REFERENCES

- [1] Dutta, B., 2015. Food and medicinal values of certain species of *Dioscorea* with special reference to Assam. Journal of Pharmacognosy and Phytochemistry 3 (4): pp. 15-18
- [2] Padhan, B. and Panda, D. 2020. Potential of Neglected and Underutilized Yams (*Dioscorea* spp.) for Improving Nutritional Security and Health Benefits. Frontiers in Pharmacology, www.frontiersin.org. 11, Article 496.
- [3] Waris, R., Tripathi, S., Shukla, A.C., Agnihotri, P. 2021. An overview of the genus *Dioscorea* L. (Dioscoreaceae) in India. Plant Science Today, Vol 8 (1): pp. 72-78
- [4] Almeida, M.R., 2009. Flora of Maharashtra. Vol 5 A, Orient Press, Mumbai.
- [5] Sheikh, N., Kumar, Y., Jeri, L. and Bhat, N.A., 2017. Ethnobotanical Uses and Survey of *Dioscorea* Species of North East India: Its Conservation and Sustainable Utilization. Int. J. Curr. Res. Biosci. Plant Biol. 4 (12), pp. 117-124