

Documentation of folk knowledge on edible wild plants of North Karnataka

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In North Karnataka, fifty-one species of wild plants belonging to forty-six genera are edible. Local people use leaves, stem, flowers, fruits, seeds and roots as a part of their diet. Of the fifty one species, twenty-seven species belonging to twenty four genera produce edible fruits (eaten raw or cooked), sixteen species belonging to fourteen genera produce edible leaves and stem, four species belonging to four genera produce edible flowers, three species belonging to three genera produce edible seeds. The root extract of one species (*Hemidesmus indicus*) was used to prepare soft drink. Some of these species serve as food during famine. It is necessary to preserve the diversity of wild edible plants, as they possess an immense nutritional and medicinal value.

Present study reveals the importance of twenty-two species of plants as they are eaten substantially by village folk as well as by city dwellers. It is desirable to bring these plants under organized agriculture as new crops to increase their production and utilization.

Keywords: Edible wild plants, Folk knowledge, Karnataka, Tribal diet.

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Since early times, man had used plants for medicine, fuel, timber and food. The traditional knowledge on the use of plants as medicine is well documented^{1,2}, however, the knowledge on the use of wild plants as food is very much limited³⁻¹⁰. Large sections of population of North Karnataka living in villages and remote forests depend on edible wild plants. Even the people in cities purchase wild edible plants marketed by village folk. There is no accurate documentation of

folk knowledge on wild edible plants. The folk knowledge is fast disappearing due to factors such as migration of villagers to cities, input of high quality food in markets, etc. Hence, a survey was undertaken to document folk knowledge on wild edible plants of North Karnataka.

Material and Methods

Gulbarga district lies between 17° 46' and 18° 12' N latitude and 76° 4' and 77° 04' E longitude (Fig. 1). The district has mainly rain fed agricultural land along with an estimated area of 345 sq km of

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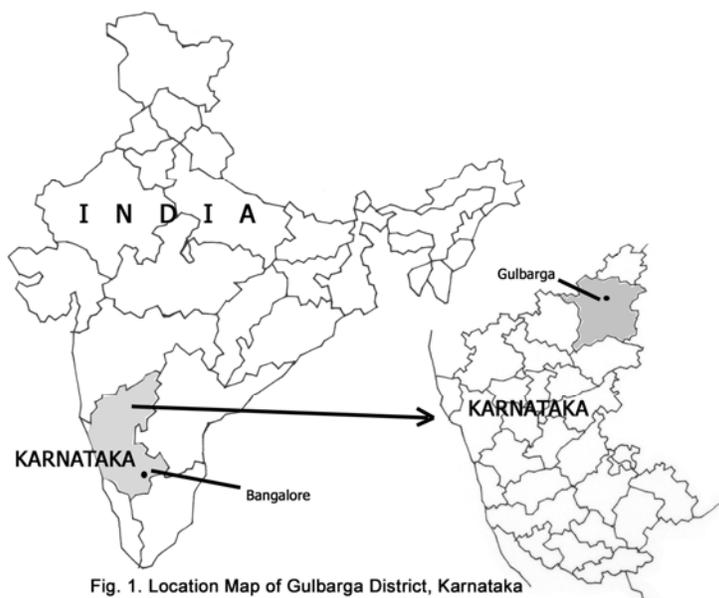


Fig. 1. Location Map of Gulbarga District, Karnataka

reserve forest and 745 sq km of unclassified forest area. During the year 2002-2003, several trips were undertaken to different villages in Gulbarga district, viz. Mailapur, Wadi (both Chitapur Taluka), Doranahalli (Shahapur Taluka), Gogi (Jevergi Taluka), Naikal (Yadgir Taluka), Saradgi (Gulbarga Taluka), Chowadapur (Afzalpur Taluka), Chindicholli (Chindicholli Taluka), Bhosaga, Rajapur, Kusnoor (all belong to Gulbarga Taluka) and Gulbarga University campus to document folk knowledge on wild food plants and their medicinal uses.

The people in these villages comprised those belonging to different communities including 'Lambanis' — an ethnic group. Lambanis are also called Lambadi or Banjara and their settlements are known as 'Tanda'. They live in villages or nearby forests to earn their livelihood and

are generally well aware of uses and therapeutic importance of plants. The tribal women sell minor forest products like fire wood, honey, herbal drugs, wild edible leafy vegetables (*Lactuca scariola*, *Digera muricata*, *Amaranthus viridis*, etc.) and wild edible fruits (*Carissa carandas*, *Cucumis trigonus*, *Annona squamosa*, *Zizyphus* spp., etc.).

Data sheets were prepared with village name and its locality, date of visit, address of respondent, age, sex and community or ethnic group, vernacular names of edible wild plants, botanical name and family, habit and habitat, plant description, edible parts, how they are eaten (raw or cooked), special attributes if any (food and medicinal uses), herbarium/photograph reference and any other information. At least five people in each village, some of them belonging to Lam-

bani ethnic group were interviewed. Interacting with respondents, information on use of wild plants as food, parts consumed, along with their medicinal uses was recorded. Several of the respondents confirmed the use of wild plants as food and also their medicinal use.

Plant species were identified with the help of flora^{11,12} and also by referring them to the herbarium collections maintained in P G Department of Botany, Gulbarga University, Gulbarga. Preliminary data was recorded by observing fresh plants in fields. Standard methods were followed with regard to collection of plant materials, drying, mounting, preparation and preservation of herbarium sheets. Herbarium specimens were deposited in herbarium maintained in the Botany Department of Gulbarga University, Gulbarga, Karnataka.

Results

One or the other parts of fifty-one species of wild plants belonging to forty-six genera of 37 families were edible. Out of these 51 species, 27 species belonging to 24 genera of 18 families yielded fruits, which are eaten raw or cooked. Sixteen species belonging to 14 genera and 12 families yielded edible leaves/stems. Flowers of four species belonging to four genera (Family — Fabaceae) were edible. Seeds of three species belonging to three genera of three different families were edible. The root extract of one species (*Hemidesmus indicus*) was used to prepare soft drink for its pleasing odour. Out of the fifty-one wild edible plants, twenty-two species are consumed substantially by village folk. Following enu-

meration provides an account of these twenty two species with regard to specific name, family, vernacular name in different languages – Kannada (Kan.), Hindi, English (Eng.), edible parts and medicinal uses.

1. *Basella alba* Linn., Chenopodiaceae, Kan. – Basle soppu, Hindi – Poi. Introduced and naturalized species. Commonly found in moist places and gardens. Leaves used as vegetable. Leaves first boiled, extract is taken and soup is prepared by adding spices. Boiled leaves are mixed with flour of Sorghum to prepare delicious bread called 'Roti'. Ripe fruits contain a deep violet colouring matter, used for colouring food. Leaf juice is prescribed in case of constipation, particularly in children and pregnant women and in urinary disorders. A good source of Vitamin C & B, cures mouth ulcers.

2. *Lactuca scariola* Linn., Asteraceae, Kan. – Hattarki pallaye. Common weed in cultivated fields. Leaves used as a vegetable, eaten raw (salad) or cooked. Leaf juice is used in the treatment of jaundice and is a useful diet for pregnant women as it is a good source of iron and calcium.

3. *Momordica cymbalaria* Fenzl. ex Naudin., Cucurbitaceae, Kan. – Karchi Kayi, Hindi – Kadvanchi. Commonly found in black cotton soil, a trailing herb with underground tubers. Fruits either fried or roasted with other vegetables and spices are used as vegetable. Fruits are used to cure stomachache. They are carminative, used in diseases of liver and spleen. Roasted or fried fruits are recommended in diabetes.

4. *Amaranthus spinosus* Linn., Amaranthaceae, Kan. – Mullu dantu, Mullu harive soppu, Hindi – Kanta bhaji. A weed, commonly distributed in open fields and roadsides. Inflorescence and leaves are used as vegetable. Young leaves are boiled (with Pigeon pea) to make soup; leaves are also fried with green chilly and adding salt and eaten with 'Roti' (bread). Leaf decoction is considered useful for improving digestion. Leaves are applied as a poultice to treat bruises, abscesses, burns, wounds and inflammation.

5. *Amaranthus viridis* Linn., Amaranthaceae, Kan. – Chelakerra soppu. Introduced and naturalized species, found in moist places, commonly in cultivated lands, bunds, wastelands. Leaves and inflorescence are used as vegetable like *A. spinosus*. The plant is used as diuretic, purgative enema during stomach troubles.

6. *Celosia argentea* Linn., Amaranthaceae. Kan. - Anne soppu, Hindi - Sarwari, Sufaid murga. A common weed in cultivated fields, river banks and grasslands. Widely used by local people as vegetable in their diet, according to their recipe. Seeds are used to treat diseases of blood and mouth sores. Oil extracted from seeds is mixed with milk and sugar and used as tonic.

7. *Digera muricata* (L.) Mart., Amaranthaceae, Kan. - Chenchali soppu, Gorje pallya; Hindi – Lisava. Common weed in cultivated fields and wastelands. Leaves and spikes are used as vegetable. Flowers and seeds are used to treat urinary discharge.

8. *Portulaca oleracea* Linn., Portulacaceae, Kan. – Goni soppu, Hindi –

Khursa kulfa, Eng. – Garden Purselane. Common weed in open areas, fields and gardens. Leaves and stems are used as vegetable. Leaves are boiled with Pigeon pea to prepare soup, also used by frying with spices. Leaves eaten as a cooked vegetable for the treatment of liver and kidney disorders. Leaf juice is used to treat earache.

9. *Portulaca quadrifida* L., Portulacaceae, Kan. – Goni soppu, Nuchchugoli. Common weed in open areas, fields and gardens. Leaves and stem are used as vegetable like *P. oleracea* known to possess cooling and diuretic properties.

10. *Sesbania grandiflora* (L.) Poir., Fabaceae, Kan. – Agse mara, Hindi – Agasatibak, Eng. - Swamp pea. Introduced and naturalized species. Cultivated in backyard and in Betel gardens as a support tree for betel vine. Flowers are used as vegetable; leaves rich in calcium are eaten occasionally. An infusion of the bark is recommended during the first stage of malaria. Flowers are used to treat headache, while juice from flowers is used as an eye drop.

11. *Coccinia indica* Wt. & Arn., Cucurbitaceae Kan. - Tonde hannu, Eng. - Ivory gourd. Commonly found on hedges and bushes, in cultivated lands. Unripe green fruit is used as vegetable. Bits of fruits are added in soup and also fried with oil and other spices. Ripened red fruits are eaten raw. Fruits are used in treatment of skin diseases and bronchitis.

12. *Cocculus hirsutus* (L.) Diels., Menispermaceae Kan. – Dagadi balli, Hindi – Janti ki bel. Grows commonly in black cotton soil. Young leaves are used as vegetable. Leaves are boiled in water,

and mixed with flour of Sorghum to prepare bread called 'Roti'. The remaining boiled water is used to prepare soup. Root is used as mild laxative and powder of root is given to children as remedy for stomachache. Root is also given with ginger and sugar to treat bilious dyspepsia. Leaf juice mixed with sugar is used for the treatment of gonorrhoea.

13. *Cordia dichotoma* Forst. f., Boraginaceae, Kan. – Challe hanu, Hindi - Rasala. Common in semi-deciduous forests, occasionally found in cultivated fields. Fruits edible, contain white, transparent sticky, sweet pulp. Fruits are used as an expectorant and useful in lung diseases. Fruit juice is taken orally as blood purifier.

14. *Cucumis trigonus* Roxb., Cucurbitaceae Kan. – Mekke kayi. Commonly found in cultivated fields. Fruits are eaten raw as vegetable. The seeds are reported to be cooling tonic, fruits used in the treatment of burns and fever.

15. *Hemidesmus indicus* (L.) R. Br., Asclepiadaceae Kan. - Sogade beru, Eng. – Indian Sarsaparilla. Commonly found in moist places and degraded areas. Root gives a good odour. Root powder is used as an additive in preparation of tea and soft drinks for pleasant odour. The powdered roots are used for skin and feet infections and toothache.

16. *Limonia acidissima* L., Rutaceae, Kan. – Byalada hannu, Hindi – Kavita, Eng. – Wood apple. A tree found in dry-deciduous forests and cultivated in gardens. Fruit pulp is edible. It is also used to prepare cool drinks by adding jaggery and flavours. Pulp as well as powder of woody rind is applied externally to treat

insect bites. Leaves are aromatic and are used to treat digestive trouble in children.

17. *Pithecellobium dulce* (Roxb.) Benth., Caesalpinaceae Kan. - Dwarunise. A tree found on the bunds of agricultural fields and near riverbanks. Aril of seeds is eaten.

18. *Physalis minima* L., Solanaceae, Kan. – Gudde hannu. Common weed, grows on bunds in irrigated fields. Fruit edible, unripe fruit tastes bitter, but ripe one tastes similar to tomato. Fruits considered to be tonic, diuretic and purgative.

19. *Opuntia dillenii* (Ker – Gawler) Haw., Cactaceae, Kan. – Papas kalli, Hindi - Nagphana, Eng. - Prickly pear. Common in scrubby jungle along roadsides and in degraded lands. Fruit is eaten, used to prepare jelly and is used as colouring material for cool drinks. Fruit is used in the treatment of cough, considered as cooling agent.

20. *Solanum nigrum* Linn., Solanaceae, Kan. – Kaki hannu, Hindi – Makoi, Eng. – Black nightshade. A weed in black cotton soils. Fruit edible when ripe, taste is similar to that of tomato. All parts of the plant are considered to be demulcent, laxative. Fresh juice is used for treating dysentery, dropsy and enlargement of liver.

21. *Canthium parviflorum* Lam., Rubiaceae, Kan. - Khare hannu. Highly grazed shrub, common in dry lands. Fruits edible; when ripe they become yellow with sweet pulp. Raw fruits are also used in preparation of pickle. Decoction of root and leaves is prescribed to treat certain stages of flux.

22. *Carissa carandas* Linn., Apocynaceae, Kan. – Kaule kayi, Hindi –

Karaunda. Highly grazed shrub, common in dry lands. Fruit is edible. In villages, farmers and children eat these fruits with salt. Unripe fruits are used to prepare pickles and sweet, while ripe fruits are used to prepare juice, salads and jams. Roots are used to treat stomachache and have anthelmintic properties. Fruits are considered anti-scorbutic.

Edible fruit yielding species namely, - *Borassus flabellifer* Linn., *Annona squamosa* Linn., *Moringa oleifera* Lam., *Phyllanthus emblica* L., *Syzygium cumini* (L.) Skeels., and *Terminalia catapa* Linn. are found in wild as well as in cultivated state in North Karnataka.

Different parts of the following species are occasionally eaten. They may not be considered as source of substantial food. Their enumeration is given below:

1. *Abutilon indicum* (L.) Sweet., Malvaceae, Kan. - Mudregida, Hindi - Jhampi. Grows commonly in degraded lands in dry areas. Seeds are eaten. Decoction of leaves is used as mouthwash to soothe toothache and tender gums; externally it is used as a wash for wounds and ulcers. Leaves are taken with hot water to treat fever. Root is considered tonic and diuretic.

2. *Aegle marmelos* Corr. ex Roxb., Rutaceae, Kan. - Bilva, Hindi - Bael, Bel. Usually scattered in dry deciduous forests and near temples. The ripe fruits are eaten fresh; its aromatic pulp is diluted with water and sweetened with sugar and tamarind to make a delicious cooling drink. The aromatic pulp is called "Morabba". Tender unripe fruits have astringent and digestive property. They are also used in stomachache and to promote di-

gestion and strength. Pulp of the unripe fruits is used to treat dysentery. Leaves are bitter and used as febrifuge.

3. *Atylosia scarabaeoides* (L.) Benth., Fabaceae, Kan. - Kadu togari. Commonly found in hedges, grassy areas and open forests. Leaves, green pods and seeds are edible. Seeds are used as substitute for Pigeon pea. Pods are boiled with water adding small quantity of salt and seeds are eaten after boiling. They are also used in the treatment of fever, pains, sores and dysentery. Root is made into a paste and mixed with coconut oil and applied on head for 15 days to check falling hairs.

4. *Bacopa monnieri* (L.) Pennel, Scrophulariaceae, Kan. - Neeru brahmi. Commonly found in wet places and near water bodies. The leaves are used as vegetable. Leaves fried with oil and spices are taken with rice or bread. It is astringent, bitter and cooling and used as nerve tonic, cardiogenic, and diuretic.

5. *Balanites aegyptiaca* (L.) Delile., Simarubaceae, Kan. - Ingula, Hindi - Hingan, Hingu. A spiny shrub or a small evergreen tree, grows widely in black cotton soil. Dried fruit pulp is edible. Kernel oil is used in the treatment of skin diseases, burns and scrapes, and whooping cough. Fruit pulp mixed with goat's milk is rubbed on the chest to treat pneumonia in children. Fruit powder is mixed with soap nut powder (*Sapindus laurifolia*), cardamom, ginger and clove and the mixture is used to treat jaundice.

6. *Caesalpinia pulcherima* (L.) Sw., Caesalpinaceae, Kan. - Ratanagandhi, Kenjige, Hindi - Golutura. Introduced and naturalized species. Flowers and young seeds are edible. An infusion of the

flowers is used as a pectoral and febrifuge and in the treatment of bronchitis, asthma, intestinal worms and malarial fever. Powdered seeds are used as a remedy for stomachache.

7. *Cassia auriculata* Linn., Caesalpinaceae, Kan. – Amregida, Tavarke soppu, Tavarke gida, Hindi - Tarwar, Tarode. A very common weed in wastelands. Young flower buds are edible; sometime the powdered young flower buds are used as tea powder instead of commonly used tea powder in rural areas. The decoction of bark is given to relieve stomachache and dysentery. Leaves are useful for treating ulcers, swellings, boils, skin diseases and leprosy.

8. *Cassia serecea* L., Caesalpinaceae, Kan. - Chogache, Hindi - Chakvat. A common weed in wastelands and roadsides. Leaves are used as vegetable, fried with other vegetables like brinjal, potato, etc. Mature leaves in the form of decoction are used as a laxative. They are extremely useful in curing ringworm and skin diseases.

9. *Delonix regia* Hook. f., Caesalpinaceae, Kan. & Hindi – Gulmohr, Eng. - Gulmohr, Flame tree. A common avenue tree. Introduced and naturalized species. Flowers are edible, sweet in taste. Children use stamens for playing. Flowers are used in dysmenorrhoea.

10. *Diplocyclos palmatus* (L.) C. Jeffery, Cucurbitaceae, Kan. - Linga tonde balli, Hindi – Shivalingi. A climber found on hedges in villages. Unripe fruits are used as vegetable. Ripened red fruits are sweet and taste like *Cucumis* sp. Plant is considered bitter, used to relieve

bilious attack. Seeds are sometimes taken in combination with other plant drugs by women to help conception and prevent miscarriage.

11. *Ficus benghalensis* Linn., Moraceae, Kan. – Alada mara, Hindi – Bargad, Eng. - Banyan tree. Ripened red fruit is edible. Good source of food for birds. The milky latex is applied externally for pains in rheumatism. Infusion of young buds is used to treat dysentery.

12. *Ficus racemosa* Linn., Moraceae, Kan.- Atti-hannu, Hindi - Gular, Eng. – Cluster fig. Figs are edible when ripe. Villagers collect figs from forest and sell them in cities. Bark is astringent and its decoction is used as a wash for wounds. Roots used to treat dysentery. Fruits astringent.

13. *Indigofera glandulosa* Roxb. ex Willd., Fabaceae, Kan. – Advimente. Common weed in dry and sandy soils. Abundantly found in cultivated fields. Leaves are used as vegetable by boiling with Pigeon pea seeds, also used to make flour along with finger millet. Leaves are used in preparing soup, called ‘ganji’, which is used as famine food. Leaf juice is used as ointment to treat sores and ulcers.

14. *Kalanchoe pinnata* (Lam.) Pers., Crassulaceae, Kan. – Javuku, Asathibhaksha, Hindi - Zakhm haiyat. Found in gardens. Leaves are used to prepare sauce along with other ingredients. Roasted leaves are used to treat wounds, boils, and insect bites.

15. *Lantana camara* Linn., Verbenaceae, Kan. – Hunnigida, Hindi – Raimuniya Eng. – Lantana, Wild sage.

Introduced and naturalized species. Common along roadsides, railway tracts and scrubby jungle. Fruit is edible. Leaves are also used as betel leaves and chewed as *pan*. Rootstocks and fruits are used for treating throat infections. Leaves are used for stomachache.

16. *Merremia gangetica* (L.) Cuf., Convolvulaceae, Kan. – Iikivi, Hindi – Musakani. Found in damp grassy habitats. Leaves are used as vegetable, young leaves fried with groundnut oil, and other spices and used with bread, called '*Roti*' made from Sorghum flour. Leaves are also used in soups. Leaf juice is given for migraine and as an ear drop to relieve abscesses and ulcers. Root is used to treat diseases of eyes and gums.

17. *Mukia madaraspatana* (L.) Roem., Cucurbitaceae, Kan. - Gubbi soutekeyi, Hindi – Agumaki. Frequently found on hedges and open areas. Fruits edible; they are used raw and also as vegetable. They taste similar to cucumber. Root when chewed relieves toothache. Fruits used in the treatment of abdominal disorders, cough and vomiting.

18. *Santalum album* Linn., Santalaceae, Kan. - Srigandha, Hindi – Chandan, Eng. - Sandal wood. Fruit is edible when ripe, endosperm edible. Wood and oil are used as cooling, sedative, diuretic and expectorant agent. A paste of wood is applied externally to treat skin diseases. Held sacred.

19. *Sorghum halepense* Pers., Poaceae, Kan. - Sanna kaddi hullu, Kadu kambu hullu. Commonly found near Sorghum fields and prefers red soil. Seeds are used to prepare flour, which is mixed

with flour of Sorghum. Decoction of roots is given to treat muscular pains.

20. *Tribulus terrestris* Linn., Zygophyllaceae, Kan. – Negilu mullu, Hindi – Gokhru, Eng. - Land caltrops. Common weed in sandy soils. Leaves are used as vegetable. The leaves are used to treat stomachache and paste prepared from them is used to treat kidney stones.

21. *Typha angustata* Bory & Chaub., Typhaceae, Kan. – Aane jondu, Hindi – Potera, Eng. – Bulrush. Commonly found in marshy habitats and water bodies. Flour extracted from roots is used with Sorghum flour. Young male spike (upper part of inflorescence) is a delicious vegetable. Young shoots are used raw or boiled.

22. *Ziziphus nummularia* Wt. & Arn., Rhamnaceae, Kan. - Bare hannu, Hindi – Ber, Eng. - Wild jujube. Very common in grasslands. Fruits edible when ripe, pulp juicy and tasty. Endocarp is also edible. Leaves are applied externally to treat boils and other cutaneous diseases. Dried leaves are burnt and the smoke is inhaled to relieve cough and cold

23. *Ziziphus oenoplia* (L.) Mill., Rhamnaceae, Kan. - Hargina hannu, Hindi - Makai, Eng. - Jackal jujube. Commonly found in heavily grazed areas and dry deciduous forests. Ripe fruits are black and edible. Powdered bark mixed with ghee is applied to check swellings caused by tooth infections, for spongy gum and teeth.

Discussion

Due to the importance of twenty-two species of edible wild plants, it is suggested to bring these plants [*Basella alba*

Linn., *Lactuca scariola* Linn., *Momordica cymbalaria* Fenzl. ex Naudin., *Amaranthus spinosus* Linn., *Amaranthus viridis* Linn., *Celosia argentea* Linn., *Digera muricata* (L.) Mart., *Portulaca oleracea* Linn., *Portulaca quadrifida* Linn., *Sesbania grandiflora* (L.) Poir., *Coccinia indica* Wt. & Arn., *Cocculus hirsutus* (L.) Diels., *Cordia dichotoma* Forst. f., *Cucumis trigonus* Roxb., *Hemidesmus indicus* (L.) R. Br., *Limonia acidissima* Linn., *Pithecellobium dulce* (Roxb.) Benth., *Physalis minima* Linn., *Opuntia dillenii* (Ker – Gawler) Haw., *Solanum nigrum* Mill., *Canthium parviflorum* Lam., *Carissa carandas* Linn.] under organized agriculture, as new crops to increase their production and utilization. For example, the use of *Lactuca scariola* Linn. leaves in their diet (both raw and cooked) can alleviate iron, B complex and calcium deficiency in pregnant women and lactating mothers. The use of *Sesbania grandiflora* (L.) Poir. flower buds as cooked vegetable can alleviate the calcium deficiency. Cooked fruits of *Momordica cymbalaria* Fenzl. ex Naudin. can be consumed along with 'roti'. *Amaranthus* spp., *Portulaca* spp. and *Digera muricata* are good sources of leafy vegetables. The fruit pulp of *Limonia acidissima* mixed with jaggery forms a good refreshing drink, which has an export value.

Perusal of literature indicates the diversity of wild edible plants in different regions in India. For example, edible wild plants documented in North India^{5,7,9,10,13-20} are entirely different compared to South India²¹⁻²³. Even in South India, the diversity of wild edible plants for Andhra

Pradesh^{8,22-23} is different from that of Karnataka³⁰. Therefore, it is vital to document the folk knowledge on wild edible plants in different regions for their optimum utilization and conservation.

In Karnataka, ethnobotanical studies on medicinal plants were conducted in Uttara Kannada²⁴⁻²⁶, Chikmagalur²⁷, South Canara²⁸ and Tumkur districts²⁹. So far in Karnataka, no detailed study on ethnobotany of edible wild plants is conducted. The present study is first of its kind in Karnataka, which gives an idea and basic material for further botanical research. A few plants, viz. *Basella alba*, *Lactuca scariola*, *Momordica cymbalaria*, *Sesbania grandiflora*, etc. are identified as promising candidates for bringing them under organized agriculture. Several of the wild edible plants observed in the present survey, also serve as famine food and foods of delicacy. As the local folk exploit the wild edible plants in a given area, it has become necessary to conserve these edible wild plants.

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