



## TRADITIONAL KNOWLEDGE ON EDIBLE MEDICINAL PLANTS OF HARAPANAHALLI TALUK IN DAVANGERE DISTRICT OF KARNATAKA, INDIA

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### ABSTRACT

An ethnobotanical survey of traditional medicinal plants in Harapanahallilli taluk of Davangere district in Karnataka, India was conducted during November 2013 to October 2014. Forty six edible plant species belonging to 43 genera and 32 families were found to be used as effective remedy against various diseases by the rural and ethnic people. Among these *Amaranthus blitum* L., *Capparis zeylanica* L., *Coccinia grandis* (L.) Voigt, *Momordica charantia* L. and *Cinnamomum zeylanicum* Bl. were most commonly used edible medicinal plant species in the study area. The scientific name, family, local names of these plants along with the form of use in food and medicinal uses are given in the present paper.

**KEYWORDS:** Traditional knowledge, Edible medicinal plants, Harapanahalli, Karnataka, India.

### INTRODUCTION

The use of medicinal plants products could be traced back as the beginning of human civilization. The earliest documentation of medicinal plants in Hindu culture or in India is found in “Rigveda”, which is said to have been written between 4500 B.C. and 1600 B.C. and is supposed to be the oldest repository of human knowledge. <sup>[1]</sup> It is evident that the Indian people have tremendous passion for medicinal plants and they use them for wide range of health related applications. Drugs obtained from these plants are believed to be much safer and exhibit a remarkable efficacy in the treatment of various diseases. <sup>[2]</sup> The World Health Organization has estimated that 80% of the populations of developing countries being unable to afford pharmaceutical drugs rely on the plant based traditional medicines to sustain their

primary health care needs. <sup>[3]</sup> A great deal of information about the traditional uses of plants is still intact with rural and tribal peoples. But the native healers are often reluctant to accurately share their knowledge to outsiders. <sup>[4]</sup> The traditional knowledge of the indigenous people not only comprises the information about the food value of the plants, but also their specific medicinal uses. <sup>[5]</sup> At present edible medicinal plants are highly threatened due to over exploitation, unsustainable harvesting for trade, habitat destruction, human encroachment and application of inappropriate technologies. In view of this, an attempt has been made to collect ethnobotanical information on edible medicinal plants in the Harapanahalli taluk of Karnataka. Documenting the traditional knowledge is important for the conservation of edible medicinal plants as well as their sustainable utilization.

## MATERIALS AND METHODS

Harapanahalli, one of the taluks in Davanagere district of Karnataka state is located at 14.8° North latitude and 75.98° East longitude (Fig. 1). It has an average elevation of 633 meters above the sea level. The population in Harapanahalli taluk is 3, 02,003 as per the survey of census during 2011 by Indian Government. There are 1, 54,289 males (51%) and 1, 47,714 females (49%) in the taluk. The total geographical area of the study area is 143024 ha. Major part of the taluk lies in Krishna basin and is drained by Tungabhadra River. The taluk enjoys dryness in the major part of the year and hot summer. In general south west monsoon contributes 58% of total rain fall and north east monsoon contributes 22% of rain fall. The remaining 20% rain fall is received as sporadic rains in summer months. Normal annual average rainfall is 656 mm. Major part of taluk is covered by Red sandy loam soil and followed by black soil. Major crops cultivated in this region are Maize, Jowar, Ragi, Sunflower, Groundnut and Cotton. People of the study area exhibit a vast diversity in their culture, tradition and living system.



**Fig.1: Location map of the study area.**

The information on edible medicinal plants used for treating various human ailments was obtained during the field survey of the study area. The surveys were conducted during November 2013 to October 2014 using ethno-botanical and Participatory Rural Appraisal (PRA) methods. For this purpose, frequent field trips were made to 16 villages of different pockets of the taluk. A total of 32 herbal healers (26 men and 06 women) of age group between 42 and 84 years belonging to various communities such as Swamiji, Pandit, Kuruba and tribes like Valmiki, Korava and Lambani were interviewed and recorded the information in a questionnaire developed by Ethnobotanical Society of India. Data on the local names of edible plants, habit, form of use in food, parts used, medicinal uses, method of drug preparation and dosage were noted. The ethnic as well as the cultural importance of the drug plants were also recorded. The botanical specimens of all reported medicinal plants were photographed, collected and identified by referring to the Flora of Davangere district, <sup>[6]</sup> Flora of Karnataka <sup>[7]</sup> and the Flora of Presidency of Madras. <sup>[8]</sup> Voucher specimens were made by using standard plant press, authenticated and deposited at the Herbarium centre maintained in the department of Botany, A D B First grade college, Harapanahalli.

## RESULTS AND DISCUSSION

The results of the ethnobotanical survey are compiled in Table 1. A total of 46 edible medicinal plant species belonging to 43 genera and 32 families were identified for the treatment of human ailments in the study area. All these plant species are arranged in alphabetical order. For each species, scientific name, family, local name, form of use in food and medicinal uses along with parts used, mode of drug preparation and dosage are provided. The most dominating families were Apiaceae, Amaranthaceae and Zingiberaceae with 3 species each followed by Euphorbiaceae, Fabaceae, Myrtaceae, Arecaceae, Cucurbitaceae, Malvaceae, Rutaceae, Lamiaceae and Liliaceae with 2 species each. Twenty two species (47.82%) are herbs, 12 species (26%) are trees, 7 species (15.21%) are shrubs and five species (10.86%) are climbers. Of the plants cited, 30 (65.21%) are cultivated species, 11 (23.91%) are wild and five (10.86%) are semi-cultivated. Different plant parts were used for the treatment of diseases. Leaves were the most used (39.13%) followed by fruits (21.73%), seeds (15.21%), stem (8.6%), bark (6.5%), roots (6.5%) and flowers (2.17%) in decreasing order. The herbal preparations were in the form of curry, juice, decoction, powder and paste. Even though all plant species used by the traditional healers for the treatment of human diseases are available in the study area, the occurrence of *Canthium parviflorum* Lam. and *Cissus quadrangularis* L. is scarce. Plant species such as, *Cinnamomum zeylanicum* Bl.,

*Elettaria cadamomum* Maton and *Phoenix dactylifera* L. are not available as wild or cultivated in the study area. However, the useful parts of these plants are purchased from the market.

**Table-1: Edible medicinal plants used by the traditional healers of Harapanahalli taluk in Davangere district of Karnataka, India.**

Sl. No.	Plant Species	Family	Local name	Form of use in food	Medicinal use
1	<i>Abelmoschus esculentus</i> (L.) Moench	Malvaceae	Bendae gida	Tender fruits are used in making curry and other forms of food dishes.	Fresh fruits paste mixed with sugar is given orally 3 times a day for 3 to 4 days to treat white discharge in women.
2	<i>Allium cepa</i> L.	Liliaceae	Nirulli	It is used as ingredient in making curry and other forms of food dishes.	Small pieces of onion kept in honey overnight are given orally in the morning for 21 days to cure asthma. Inhalation of fresh bulb vapor relieves breathing problems.
3	<i>Allium sativum</i> L.	Liliaceae	Belulli	It is used in making pickles and also as spice in food dishes.	Garlic paste is used for jaundice. Two to three cloves are eaten with little salt at night for 3 days to cure cough.
4	<i>Amaranthus blitum</i> L.	Amaranthaceae	Kirukasale soppu	Fresh twigs are used in making curry and other spicy dishes.	Leaf juice or curry is given for dissolving kidney stones. It is also used for treating constipation.
5	<i>Amaranthus tricolor</i> L.	Amaranthaceae	Rajgiri soppu	Fresh twigs and leaves are used in making curry and other spicy dishes.	About 50 ml of leaf juice is given twice a day for 4 to 5 days in case of jaundice. Leaf curry is eaten for treating constipation
6	<i>Anethum sowa</i> Roxb.	Apiaceae	Sabbakshi	Fresh twigs are used in making curry and other spicy dishes.	Eating the plant raw or in the form of curry prevents and controls the cancer. Fruits are used to remove worms in the stomach and also to cure fever.
7	<i>Annona squamosa</i> L.	Annonaceae	Sitaphal	Fresh fruit pulps are eaten and also used in making juice.	About 15 ml of stem bark decoction is given twice a day for 2 to 3 days to cure dysentery. Leaf extract is given to reduce stomach pain.
8	<i>Basella alba</i> L.	Basellaceae	Basalae soppu	Leaves are used in making curry and spicy dishes.	Leaf juice is given for treating fever and dysentery
9	<i>Cajanus cajan</i> (L.) Mills.	Fabaceae	Togari gida	Fresh tender twigs are used in making	Few leaves are ground with water and given twice a day for

				curry. Seeds are used in the preparation of spicy dishes.	3 to 4 days to treat constipation and piles. The decoction of the seed is given for destroying worms in the stomach.
10	<i>Canthium parviflorum</i> Lam.	Rubiaceae	Karae gida	Ripen fruits are eaten and also used in making juice.	The leaf extract or fruit juice is taken with butter milk twice a day for 3 days in case of stomach pain, constipation and fever.
11	<i>Capparis zeylanica</i> L.	Capparaceae	Tottila balli	Leaves and fruits are used in making curry.	Dry fruit pulp is pounded with little pepper and rock salt. This mixture is given orally with water for indigestion and constipation.
12	<i>Carica papaya</i> L.	Caricaceae	Parangi gida	Ripen fruits are eaten and also used in making juice.	Few leaves pounded with pepper and garlic to make into pills of pea size. Two pills per day are given with milk for 4 to 5 days in case of jaundice.
13	<i>Carissa carandas</i> L.	Apocynaceae	Kavalae gida	Raw fruits are used in making chutney and pickles. Ripen fruits are eaten and also made to juice.	Few fruits are ground with cumin seeds to make a paste which is given orally with butter milk daily twice for a week to cure constipation and piles.
14	<i>Celosia argentia</i> L.	Amaranthaceae	Kolani soppu	Leaves are used in making curry.	Leaf juice is given to cure stomach ulcers while its decoction is gargled for mouth ulcers.
15	<i>Centella asiatica</i> (L.) Urban	Apiaceae	Vondelaga	Leaves are used in making curry.	Few leaves are eaten daily morning for 21 days to cure mental disorders and to improve memory power.
16	<i>Cinnamomum zeylanicum</i> Bl.	Lauraceae	Dalchinni chekke	Stem bark is used as spice in various food dishes.	About 5 g of stem bark powder is taken with water daily once for diabetes. It is also given with honey for stomach pain.
17	<i>Cissus quadrangularis</i> L.	Vitaceae	Mangroli	Leaves are used in making curry and other forms of food dishes.	Stem paste is applied on the spot of bone fracture for reunion. Leaf juice is given orally for digestive problems.
18	<i>Citrus medica</i> L.	Rutaceae	Nimbae gida	Fruits are used in making pickles and also in making juice.	Tender leaves ground with coconut oil is applied for muscular and joint pains. Lemon juice in hot water is given thrice a day for 3 days to treat dysentery.
19	<i>Coccinia grandis</i> (L.) Voigt	Cucurbitaceae	Thondae balli	Raw fruits are used in making curry while ripen fruits	Ripened fruits are crushed with buttermilk and taken orally for 3 to 4 days in case of

				are eaten for their juicy sweet pulp.	dysentery. Leaf extract is poured in ear for throat infection.
20	<i>Cocculus hirsutus</i> (L.) Diels	Menispermaceae	Dagadi balli	Leaves are used in making curry.	Half a teaspoon of root powder is taken with water twice a day for diabetes. Leaf decoction is given for constipation, piles and for treating kidney stones.
21	<i>Cocos nucifera</i> L	Arecaceae	Tengina mara	Coconut meat (copra) is used in making chutney and in many types of food dishes.	About 100 ml of root decoction is given 3 to 4 times a day with sufficient drinking water for dissolving kidney stones.
22	<i>Coleus amboinicus</i> Lour.	Lamiaceae	Doddapatre	Leaves are used as spice in some of the food dishes	Few leaves are eaten daily twice for 3 to 4 days to cure cough and asthma. Leaf decoction is given orally for treating urinary disorders
23	<i>Coriandrum sativum</i> L.	Apiaceae	Kottumbari	Fresh leaves are used as spice for various food dishes.	About 50 ml of leaf or seed decoction is given orally thrice a day for 3-4 days to treat irregular menstruation in women.
24	<i>Curcuma longa</i> L.	Zingiberaceae	Arishina	Dried rhizome powder is used as spice in various forms of food dishes.	One spoonful of turmeric powder and little pepper is given with honey or milk at night for 3-5 days to cure cough and cold
25	<i>Elettaria cadamomum</i> Maton	Zingiberaceae	Elakki	Fruits or seeds used as spice in sweets and other forms of food dishes.	Whole fruit is taken with ripen banana daily night for constipation and piles. Seeds are eaten with sugar candy and honey for treating jaundice.
26	<i>Hibiscus cannabinus</i> L.	Malvaceae	Pundi soppu	Leaves are used in making pickles and curry.	About 15 to 20 ml of leaf decoction with little cumin is given twice a day for 3 to 4 days in case of fever and urinary problems.
27	<i>Mangifera indica</i> L.	Anacardiaceae	Mavina mara	Raw fruits are eaten in the form of pickles and chutney. Ripen fruits are used in making juice.	Decoction of the bark is given with 50ml of water and 10ml of honey twice a day for 1 to 2 weeks to treat all types of menstrual disorders.
28	<i>Mentha spicata</i> L.	Lamiaceae	Pudina	Leaves are used in making chutney and also as spice.	Leaf juice with ginger powder is given with honey daily 3 times to cure chronic cough. The leaves are also used for treating cancer
29	<i>Momordica</i>	Cucurbitaceae	Hagala Kayi	Raw fruits are used	Twenty to thirty ml of fruit



	<i>charantia</i> L.			in making curry and chips.	juice is given daily morning in empty stomach for 3 months in case of diabetes mellitus.
30	<i>Murraya koenigii</i> (L.) Spreng.	Rutaceae	Karibevu	Leaves are used as spice in making various forms of food dishes.	Few leaves are eaten daily night before going to bed for diabetes. About 100 ml of decoction prepared by boiling of leaves with cumin, jaggery and ginger is given orally thrice a day for cold and cough
31	<i>Opuntia dillenii</i> (Ker-Gawl.) Haw.	Cactaceae	Rakkas balli	Ripen fruit pulp is eaten and also used in making juice.	Two spoonful of ripen fruit juice with sugar is given orally twice a day for 21 days to treat all types of piles.
32	<i>Oxalis corniculata</i>	Oxalidaceae	Pullampurachi	Leaves are used in making curry and other forms of food dishes.	Leaf juice is given orally for treating fever, dysentery and urinary tract problems.
33	<i>Phoenix dactylifera</i> L.	Arecaceae	Uttutti	Fruit pulp is eaten and also used in making sweet food dishes.	About 8 to 10 seeds are powdered and boiled in 4 cups of water till it reduced to half cup and given orally for dysentery.
34	<i>Phyllanthus acidus</i> (L.) skeels.	Euphorbiaceae	Nelli gida	Fruits are used in making pickles and also juice.	Fruit powder and the seed powder of <i>Syzygium cumini</i> are mixed together and one spoonful of this mixture is taken twice a day for diabetes.
35	<i>Phyllanthus emblica</i> L.	Euphorbiaceae	Bettada Nelli	Fruits are used in making pickles and also juice.	Fruit juice is given orally for jaundice. Dry fruits after removing seeds are ground with equal amount of turmeric powder. One spoonful of this mixture is given twice a day for diabetes.
36	<i>Portulaca oleracea</i> L.	Portulacaceae	Goli soppu	Fresh twigs are used in making curry and also dal.	Leaf juice is given orally for stomach pain and dysentery. Leaf paste is applied for insect bites and skin diseases.
37	<i>Psidium guajava</i> L.	Myrtaceae	Perala gida	Ripen fruits are eaten and also used in making juice.	Few leaves are ground and taken with buttermilk orally twice a day for a week to cure piles. Fresh fruits are eaten with lemon juice for treating constipation.
38	<i>Punica granatum</i> L.	Punicaceae	Dalimbae	Fresh and juicy seeds of ripen fruits are eaten and also used in making juice.	Three to four young twigs are eaten with little salt twice a day for one week to cure chronic stomach pain and dysentery.

39	<i>Raphanus sativus</i> L.	Brassicaceae	Radish	Root tubers are eaten fresh with food and also used in making food dishes.	Two to three g of seed powder is given with a cup of butter milk for a week to treat constipation and piles.
40	<i>Sesamum orientale</i> L.	Pedaliaceae	Yellu gida	Roasted seeds are used in making sweet as well as spicy dishes.	About 50g of seeds are ground with jaggery, boiled and filtered. The filtrate is given orally for 4 to 5 days in case of irregular menstruation.
41	<i>Solanum nigrum</i> L.	Solanaceae	Kaki hannu	Ripen fruits are eaten and also used for making juice.	Few vegetative buds and flowers are ground with cumin and boiled in butter milk. It is then cooled and given daily morning before breakfast for two months in case of anemia.
42	<i>Syzizium cumini</i> (L.) Skeels	Myrtaceae	Nerale mara	Ripen fruit pulps are eaten and also used in making juice.	One spoonful of seed powder is taken with little ginger powder and honey twice a day in case of diabetes. Few young leaves are ground and given with water daily morning for a week to cure menstrual problems.
43	<i>Tamarindus indica</i> L.	Caesalpinaceae	Hunasemara	Fresh fruits are used in making chutney. Ripen fruit pulp juice is used making variety of food dishes.	About 15 to 20 ml of root decoction is given twice a day for 3 to 4 days in case of stomach pain and ulcers. Leaf paste is applied for various types of skin diseases.
44	<i>Trigonella foenum graecum</i> L.	Fabaceae	Menthya soppu	Fresh tender twigs are used in making curry. Seeds are used as spice in various food dishes.	Few seeds are soaked in 50 ml of water for overnight. In the morning, the water after removing seeds is given orally for diabetes mellitus.
45	<i>Zingiber officinale</i> Roscoe	Zingiberaceae	Shunti	Fresh or dried rhizome is used as spice in various forms of food dishes.	Two to five g of ginger powder is taken with hot water daily twice for indigestion until cured. Ginger juice with honey is given for treating cough and cold.
46	<i>Ziziphus maritima</i> Lam.	Rhamnaceae	Bare gida,	Ripen fruit pulp is eaten and also used in making juice.	Half a teaspoon of seed powder is taken with little honey for diabetes. The fruit juice is given for constipation.

The plant species reported in the present study were cross checked with the available literature. Some of these plant species were already identified for the same purpose but the



parts used, method of drug preparation and dosage were different. Application of stem paste of *Cissus quadrangularis* L. for the reunion of fractured bones is also practiced in Coimbatore district of Tamil Nadu. <sup>[9]</sup> Use of *Punica granatum* L. for the treatment of stomach pain and dysentery is reported from the East Godavari district of Andhra Pradesh. <sup>[10]</sup> The medicinal plants cited in the present study have different kinds of curative properties in other regions as well. For example *Psidium guajava* L. is used for treating diarrhea and dysentery in Arunachal Pradesh. <sup>[11]</sup> *Allium cepa* L. is used for treating ulcers and *Canthium parviflorum* Lam. is used for treating dog bite and cat bite in Gadag district of Karnataka. <sup>[12]</sup> *Centella asiatica* (L.) Urban is used for treating fever and diarrhea in Chamarajnagar district of Karnataka. <sup>[13]</sup> *Allium sativum* L. is used for treating oral candidiasis in Hyderabad Karnataka region. <sup>[14]</sup> *Capparis zeylanica* L. is used for treating diabetes in Medak district of Andhra Pradesh. <sup>[15]</sup> *Momordica charantia* L. in North Maharashtra <sup>[16]</sup> and *Ziziphus maruittiana* Lam. in Pakistan <sup>[17]</sup> are used for treating jaundice. In Karnataka, ethnobotanical studies on medicinal plants were conducted in different taluks of the districts like Kodagu, Uttara Kannada, Chikmagalur, South Canara, Tumkur, Bidar, Shimoga and Gulbarga. <sup>[18-25]</sup> However, in Harapanahalli taluk of Davangere district, ethnobotanical study has not yet been reported. Hence, the present study represents a contribution to the existing knowledge of folk remedies that are in current practice for the treatment of human ailments.

## CONCLUSION

In the present investigation, 46 edible medicinal plant species used for the treatment of diseases were reported and documented. *Amaranthus blitum* L., *Capparis zeylanica* L., *Coccinia grandis* (L.) Voigt, *Momordica charantia* L. and *Cinnamomum zeylanicum* Bl. were the important species as prescribed by 25 traditional healers (78%). The people of Harapanahalli taluk are highly dependent on the traditional herbal medicine because of their poor socio-economic conditions and availability of effective drug plants. Hence, these plant species could be taken up for further pharmacological and clinical studies useful in the formulation of novel drugs for treating human diseases.

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