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## Traditional medicinal plants used to treat human ailments in Harapanahalli taluk of Davangere district, Karnataka

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### Abstract

An ethnobotanical survey was carried out in various villages of Harapanahalli taluk in Davangere district of Karnataka to collect the information of traditionally used medicinal plants by the tribal and rural communities. A total of 56 medicinal plants belonging to 32 families were used by the local people to cure their different ailments. Majority of the people, especially, older age class, including women heavily use these traditionally available medicinal plants as a remedy for health problems. They believe that these are easily available, less expensive, and have no side effects. The scientific name, family and local names of these plants along with their parts used, mode of preparation of drug and dosage is provided.

**Keywords:** Traditional medicinal plants, Harapanahalli, Davangere, Karnataka.

### 1. Introduction

Human beings were dependent on medicinal plants for their health problems since thousands of years. Even after the induction of 200 years of modern system of medicine, about 90% people in rural India take the help of local health practitioners for the treatment of various diseases [1]. The World Health Organization (WHO) has estimated that 80% of the populations in developing countries still rely on traditional medicines, mostly plant drugs, for their primary health care needs [2]. Demand for medicinal plant is increasingly felt, in both developing and developed countries due to growing needs of natural products being non-toxic and without any side-effects, apart from availability at affordable prices. The medicinal plant sector has traditionally occupied a pivotal position in the socio cultural, spiritual and medicinal areas of rural and tribal families [3]. The knowledge of medicinal plants has been accumulated in the course of many centuries based on different medicinal systems such as Ayurveda, Unani and Siddha. In India, it is reported that traditional healers use 2,500 plant species and 100 plant species serve as regular sources of medicine [4]. During the last few decades there has been an increasing interest in the study of medicinal plants and their traditional use in different parts of the world [5]. The present paper reveals the properties of medicinal plants used by traditional herbal healers for the treatment of several diseases like diabetes, fever, jaundice, skin diseases, snake bite, gastrointestinal, gynecological, respiratory and urinary problems in Harapanahalli taluk of Davangere district of Karnataka state. Documenting the indigenous knowledge through ethnobotanical studies is important for the conservation and utilization of biological resources.

### 2. Materials and Methods

Harapanahalli, one of the taluks in Davangere 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.

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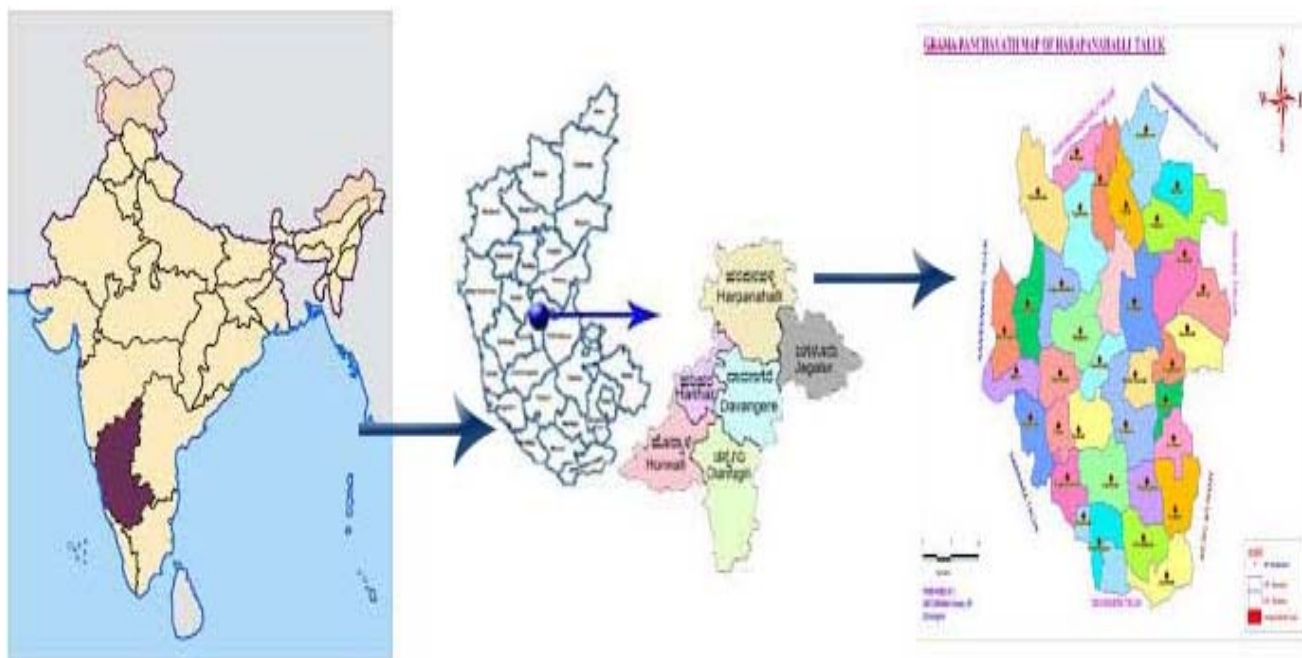


Fig 1. Location map of Harapanahalli taluk.

The information on traditional 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 March 2015 using ethno-botanical and Participatory Rural Appraisal (PRA) methods. For this purpose, frequent field trips were made to 24 villages of different pockets in the taluk. A total of 36 herbal healers (28 men and 08 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 medicinal plants, habit, parts used, traditional uses, method of drug preparation and dosage were noted. The ethnic as well as the cultural importance of the medicinal 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 [6], Flora of Karnataka [7] and the Flora of Presidency of Madras [8]. 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.

### 3. Results and Discussion

The data obtained from the survey is compiled in Table-1, where the plant species are arranged in alphabetical order. A total of 56 species belonging to 53 genera and 32 families have been reported for the treatment of human diseases. For each species scientific name, family, local name, habit, parts used, mode of drug preparation and dosage are provided. Among the 32 families recorded, the dominant families were Fabaceae with five species, Asclepiadaceae, Euphorbiaceae, Liliaceae, and Mimosaceae with 2 species each. Twenty four species (42.85 %) herbs, 11 species (19.64%) trees, 9 species (16%) shrubs and 12 species (21.42 %) were climbers. Different parts of the plants were used in the treatment of diseases. Leaves were the most used (44.64%) part, followed by roots (12.5%), fruits (10.71%), seeds (10.71%), stem (7.14%), bark (5.3%), and flowers (3.57%) in decreasing order. The herbal preparations were in the form of juice, decoction, powder and paste. Even though, all the recorded medicinal plants are available in the study area, the occurrence of *Andrographis paniculata* (Burm.f.) Wall, *Dichrostachys cinerea* (L.) Wt. & Arn. and *Gloriosa superba* L. is scarce.

Table 1: Traditional medicinal plants used in the treatment of human ailments in Harapanahalli taluk of Davangere district, Karnataka.

Plant name	Family	Local name	Habit	Part used & mode of administration
<i>Abrus precatorius</i> L.	Fabaceae	Biligulaganji	Climber	Few leaves ground with little salt to get paste and given with water twice a day for 2 days to cure stomach pain.
<i>Abutilon indicum</i> (L) sweet.	Malvaceae	Thurubigida	Shrub	Twenty ml of leaf decoction is given twice a day for 3days for treating stomach pain.
<i>Acacia arabica</i> (Lam.) Willd.	Mimosaceae	Kari jali	Tree	Two teaspoonful of stem bark decoction is given twice a day for 2 weeks to reduce sugar level in blood.
<i>Acacia farnesiana</i> (L.) Willd.	Mimosaceae	Kasturi jali	Shrub	Few leaves ground with cold water and filtered. The filtrate is mixed with little sugar and given thrice a day for 1 or 2 weeks in case of Leucorrhoea.
<i>Acalypha indica</i> L.	Euphorbiaceae	Kuppi gida	Herb	Twenty ml of whole plant extract is given twice a day for one week to treat asthma.
<i>Achyranthus aspera</i> L.	Amaranthaceae	Uttarani	Herb	Twenty ml of leaf juice is given with buttermilk twice a day for three days to cure dysentery.
<i>Adhatoda zeylanica</i> Medic.	Acanthaceae	Aadusogae	Shrub	Ten ml leaf extraction with jaggery or honey is given twice a day for 3-5 days to treat asthma and bronchitis.

<i>Aegle marmelos</i> (L.) Corr.	Rutaceae	Bilvapatre	Tree	Few fresh leaves are eaten daily morning half an hour before breakfast for 3 months to control diabetes.
<i>Aloe vera</i> (L.) N Burm.	Liliaceae	Lolesara	Herb	About 10 gm fresh leaf gel taken daily morning orally for 40 days to cure piles.
<i>Amaranthus tricolor</i> L.	Amaranthaceae	Harvesoppu	Herb	About 15 to 20 ml leaf juice is given twice a day for alternate days of a week for treating jaundice
<i>Andrographis paniculata</i> (Burm.f.) Wall.	Acanthaceae	Nelabevu	Herb	About 20ml of leaf juice is given daily morning in empty stomach for 41 days.
<i>Argemone mexicana</i> L.	Papaveraceae	Datturi	Herb	One or two gm of root bark is given with betel leaves twice a day for three days to cure malarial fever.
<i>Argyria elliptica</i> (Roth) Choisy.	Convolvulaceae	Ugani balli	Climber	Latex paste is applied over chronic wounds for cure.
<i>Aristolochia indica</i> L.	Aristolochiaceae	Eshwari balli	Climber	Root paste of this plant is given orally with carum (ajwan) within an hour in case of snake bite for cure.
<i>Asparagus racemosus</i> Willd.	Liliaceae	<i>Shatavari</i>	Herb	Hundred gm of roots are boiled in 400 ml of water till it is reduced to 100 ml. It is then cooled and filtered. The filtrate is given with goat milk twice a day for 10-14 days for treating all types of menstrual problems.
<i>Azadirachta indica</i> A. Juss.	Meliaceae	<i>Bevu</i>	Tree	Five to ten ml of leaf juice is given twice a day for three days to cure jaundice.
<i>Balanites roxburghii</i> Planch	Balanitaceae	Ingalara	Tree	About 5 gm Fruit pulp powder is given with little salt twice a day for three to five days to cure fever.
<i>Boerhaavia diffusa</i> L.	Nyctaginaceae	Sanadika	Herb	About 5 gm of whole plant powder is given with buttermilk twice a day for 5 days to cure jaundice.
<i>Cassia auriculata</i> L.	Caesalpiniaceae	Honnarrike	Shrub	Flower buds are shade dried and powdered. About 10 gm of this powder is given with honey twice a day for one month for diabetes.
<i>Cassia italica</i> (Mill.) Lam.	Caesalpiniaceae	<i>Nela avare</i>	Herb	One spoonful leaf powder is taken with warm water daily night before going to bed for constipation and piles until cured.
<i>Capparis zeylanica</i> L.	Capparaceae	Tottila balli	Climber	Ten to fifteen fresh leaves are ground with little garlic and black pepper and made into small pills of 2 gm each. One pill is taken twice a day for a week in case of cough and asthma.
<i>Centella asiatica</i> (L.) Urbon	Apiaceae	Ondelaga	Herb	About 10 ml of leaf juice is given twice a day for a week to treat jaundice.
<i>Cocculus hirsutus</i> (L.) Diel.	Menispermaceae	Dagdi balli	Climber	Half a teaspoon of root powder is taken with water twice a day for 21 days in case of diabetes.
<i>Coriandrum sativum</i> L.	Apiaceae	Kotumbari	Herb	Fifty ml plant extract is given orally twice in a week for 3 weeks to treat asthma.
<i>Curcuma longa</i> L.	Zingiberaceae	Harishina	Herb	Plant rhizome paste is applied over palm and feet followed by warming it with a hot iron plate daily once for three alternative days in a week to cure jaundice.
<i>Cynodon dactylon</i> (L.) pers.	Poaceae	Karrike	Herb	Thirty ml root extract is given with little sugar and cardamom for dysentery until cured.
<i>Dichrostachys cinerea</i> (L.) Wt. & Arn.	Mimosaceae	Vadavina gida	Shrub	Fresh leaves of this plant and leaves of <i>Tribulus terrestris</i> , 5 gm each are crushed together and given with tender coconut water for 3 days to treat painful menstruation.
<i>Dolichos biflorus</i> L.	Fabaceae	Hurali	Herb	About 50 g of seeds boiled in 200 ml of water, crushed and then filtered. The filtrate is taken with goat milk twice a day for 2 weeks to dissolve the stones of urinary tract.
<i>Erythrina indica</i> Lam.	Fabaceae	Alwana	Tree	Bark paste is applied over the affected area for treating skin diseases.
<i>Euphorbia hirta</i> L.	Euphorbiaceae	Halukudi soppu	Herb	Whole plant is ground with little salt and taken with goat milk twice a day for a week to treat respiratory problems.
<i>Feronia elephantum</i> Corr.	Rutaceae	<i>Bealavala</i>	Tree	Stem bark paste is applied over piles for cure.
<i>Ficus recemosa</i> L.	Moraceae	<i>Attimara</i>	Tree	Half a teaspoon of unripe dried fruits powder is given twice a day for two months to treat diabetes.
<i>Ficus religiosa</i> L.	Moraceae	<i>Arali mara</i>	Tree	Five gm dried fruits powder is given thrice a day for 3-4 weeks in case of irregular menstruation.
<i>Gloriosa superba</i> L.	Liliaceae	Gouri balli	Climber	Plant tuber paste is applied over the infected part for treating skin diseases.
<i>Gynandropsis pentaphylla</i> DC	Capparaceae	Golla Jiddu	Herb	Leaf paste is applied over the cuts and wounds for cure.
<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	<i>Dasavala</i>	Shrub	Few dried flowers powder is mixed with little sugar and ghee to make a paste. This paste is given orally for 2-3 days in case of Leucorrhoea.
<i>Leucas aspera</i> (willd.) spreng	Lamiaceae	<i>Thumbe</i>	Herb	Ten ml of leaf extract with little rock salt is given twice a day for stomach pain until cured.
<i>Leptadenia reticulata</i> (Retz.)Wt & Arn.	Asclepiadaceae	Aale balli	Climber	Tender twigs latex is inhaled daily two or three times to get relief from cold and cough.
<i>Mangifera indica</i> L.	Anacardiaceae	Mavu	Tree	Two to three dried seeds of this plant are pounded with same number of seeds of <i>Syzygium cumini</i> to get a powder. This powder is given

				thrice a day for 21 days to treat diabetes.
<i>Mucuna pruriens</i> (L.) DC.	Fabaceae	Nasugunni	Climber	Few soaked seeds are eaten daily morning for 21 days to treat all types of digestive disorders.
<i>Ocimum americanum</i> L.	Lamiaceae	Nayi thulasi	Herb	Fifty ml leaf decoction is given twice a day for 3 days to treat whooping cough.
<i>Opuntia dellenii</i> Haw.	Cactaceae	Papasukalli	Shrub	Ripened fruits juice is boiled with little sugar, cooled and stored in a bottle. Two spoonful of this juice is given orally twice a day for 21 days to cure piles.
<i>Pergularia daemia</i> (Forsk.) Chiov.	Asclepiadaceae	kuntigina balli	Climber	Leaves ground with garlic and little salt are made into small of 2 gm each. Two pills are given twice a day for 3 days to treat asthma.
<i>Punica granatum</i> L.	Punicaceae	Dalimbe	Shrub	Three to four young twigs are eaten with little salt twice a day for a week to cure chronic stomach pain.
<i>Ricinus communis</i> L.	Euphorbiaceae	Oudala	Shrub	About ten ml leaf juice is given orally once a day for three days to cure jaundice.
<i>Saccharum officinarum</i> L.	Poaceae	Kabpu	Herb	A cup of sugar cane juice is given twice a day for three days to cure jaundice.
<i>Sesamum indicum</i> L.	Pedaliaceae	Yellu	Herb	Fifty gm of seeds are ground with jaggery, boiled and then filtered. This filtrate is given for 4-5 days to treat irregular menstruation problems.
<i>Syzygium cumini</i> (L.) Skeels.	Myrtaceae	Nerale mara	Tree	One teaspoonful of seed powder is taken with 2-3 gm of ginger powder and 5 ml honey twice a day for one month in case of diabetes.
<i>Terminalia chebula</i> Retz.	Combretaceae	Alale mara	Tree	About ten gm of fruit powder is taken with hot water daily 2 times for dysentery until cured.
<i>Tinospora cordifolia</i> (willd) Miers	Menispermaceae	Amruta balli	Climber	About ten ml of leaf juice is given twice a day for five days to treat jaundice.
<i>Tribulus terrestris</i>	Zygophyllaceae	Neggina mullu	Herb	About 2 gm of dry fruit powder is given with a cup of warm water twice a day for 41 days to destroy kidney stones.
<i>Tridax procumbens</i> L	Asteraceae	Teke soppu	Herb	Leaf extract is applied over cuts and wounds for cure.
<i>Trigonella foenum-graecum</i> L.	Fabaceae	Menthe	Herb	Few seeds are soaked in 50 ml water for overnight. Next day morning, only water is taken orally in case of diabetes for a period of 40 days.
<i>Tylophora indica</i> (Burm.f.) Merr.	Asclepiadaceae	Aadumuttada balli	Climber	Five to ten ml of plant root extract is given twice a day for 5 days to treat asthma.
<i>Zalea decandra</i> (L.)N.Burm.	Aizoaceae	Biliganajili	Herb	Roots are powdered and boiled in 500 ml water till it reduces to 250 ml. It is filtered and made into two equal parts and taken twice a day in case of cough and cold for 3-5 days.
<i>Zingiber officinale</i> Rosce.	Zingiberaceae	Shunti	Herb	Two gm of plant rhizome powder is taken with hot water daily 2 times for indigestion until cured.

The medicinal plant species reported in the present study were cross checked with the available literature. Even though some of these plants were mentioned earlier, the parts used, mode of drug preparation, dosage and curative properties were different. For example: *Abrus precatorius* L. and *Aloe vera* (L) N. Burm. were used to treat indigestion in Gujarat [9], and for respiratory disorders in Cameroon [10]. *Capparis zeylanica* L. was used for treating dysentery in Chhatisgarah [11]. *Zingiber officinale* Rosce. and *Aegle marmelos* (L) corr. were used for gastrointestinal disorders in Arunachal Pradesh [12]. *Abutilon indicum* (L.) Sweet. for skin diseases, *Cynodon dactylon* (L) Pers. as diuretic and *Ficus religiosa* L. used as cordiotonic in Tamil Nadu [13], *Terminalia chebula* Retz. was used for treating respiratory disorders in Andhra Pradesh [14]. *Aloe vera* (L.) N Burm., *Hibiscus rosa-sinensis* L. (Retz.) R. Br. and *Azadirachta indica* A. Juss. in north Karnataka [15]; *Andrographis paniculata* (Burm f.) Wall. in Tamil Nadu [16] and *Syzygium cuminii* Skeels in Pakistan [17] were used for the treatment of diabetes. Stem of *Tinospora cordifolia* Miers. used for treating Malaria and bark of *Ficus racemosa* L. was used for treating menstrual disorders in Shimoga district of Karnataka state [18]. Leaves of *Aegle marmelos* (L.) Corr. and *Tylophora indica* (Burm f.) Merr. were used for treating asthma in Andhra Pradesh [19]. In Karnataka ethnobotanical studies on medicinal plants were conducted in Kodagu [20], Uttar Kannada [21], Chikmagalur [22], South Canara [23], Tumkur [24], Bidar [25], Bhadravati and Sagar taluk of shimoga ditrict [26, 27]. However, in Harpanahalli taluk of Davangere district no detailed study on ethnobotany of medicinal plants is reported. Hence, the present study represents a contribution to the existing knowledge of folk remedies that are in current

practice for the treatment of gastrointestinal disorders.

#### 4. Conclusion

The present investigation reports 56 medicinal plant species used in the treatment of various human ailments. The rural people of Harapanahalli taluk are highly dependent on these medicinal plants as they are easily available and proved to be effective. The reported species include both wild and cultivated ones. The most significant plants prescribed by the majority of the traditional medicinal practitioners were *Achyranthes aspera* L., *Aegle marmelos* (L.) Corr., *Cynodon dactylon* (L.) Pers. *Punica granatum* L. *Capparis zeylanica* L., *Acalypha indica* L., *Ocimum americanum* L., *Tylophora indica* Merr. and *Zalea decandra* N. Burm. 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.

#### 5. Acknowledgement

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