

## Traditional Herbal Medicinal Knowledge in Sagar Taluk of Shimoga District, Karnataka, India

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An ethno-medico-botanical field survey was conducted from May 2006 to July 2007 to document the uses of medicinal plants by traditional herbal healers in Sagar taluk of Shimoga district, Karnataka State, India. The information about plant species and their local name, part used, mode of drug preparation, dosage and duration was collected from 22 herbal practitioners and knowledgeable elder people residing in 10 randomly selected villages using semi-structured and questionnaire based interviews. In the present study, a total of 48 plant species belonging to 44 genera and 31 families used by folk practitioners to treat various common to chronic human and veterinary ailments were documented. Traditional healers in the study villages have a fairly good knowledge about the medicinal values of locally available plants, discussed in this paper.

**Keywords:** Ailments, Ethnomedicine, Herbal practitioners, Sagar taluk, Karnataka

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### Introduction

Plants are the principal source of raw material for plant-based medicine since ancient times. Of late, the traditional herbal medicines are receiving great importance in the health care sector, the world over. Each and every tribal/ethnic community has its own system of traditional medicine and they utilize natural resources around their habitats for various medicinal purposes. This traditional knowledge is handed down orally from one generation to the other through trial and error methods<sup>1</sup>. In India, a large section of the rural population living far away from urban area still rely on traditional herbal medicine for their healthcare needs. This is because of the lack of primary healthcare centers and transportation facilities. Besides, medicinal plants are easily available natural products, easily formulatable and cost-effective with negligible or no side-effects<sup>2</sup>. Ethnic drugs have often been the source for new drugs or active compounds for various critical ailments. Urbanization and developmental activities have resulted in the decline of interest in traditional culture as well as natural vegetation in India. Consequently, there is an urgent

need to record and preserve all information on plants used by different ethnic or tribal communities for various purposes before it is completely lost. A systematic survey of literature pointed out that considerable ethnic/tribal knowledge in India is documented<sup>3-9</sup>. Reports on ethnobotanical knowledge in Karnataka state are restricted to certain areas<sup>10-14</sup>. There are no previous reports on the documentation of knowledge of utilization of medicinal plants for various ailments from Sagar taluk of Karnataka State, India. Hence, an attempt was made to collect and document the ethno-medicinal knowledge from local herbal practitioners and knowledgeable people residing in the villages of Sagar taluk.

### Methodology

The study area, Sagar taluk is located in the midst of the Western Ghats region (one of the 'hot-spots of biodiversity' in India) of Shimoga district. This taluk is situated between 13°51' and 14°20'N latitude and between 74°37' and 75°17'E longitude in about the mid-south western part of Karnataka State at an altitude of 595 m above the mean sea level. The study area harbor diverse types of vegetation-evergreen, semi-evergreen, moist and dry deciduous forests and is rich in diversity of plants with medicinal values. The taluk covers an

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area of 1,940 km<sup>2</sup> including 66,125ha of forest area. The average rainfall in the study area ranges from 950 to 2,130 mm. The resident population (2, 00, 995) consists of 1, 00, 977 male and 1, 00, 018 female individuals and the total livestock of the study area is about 1, 42, 176<sup>(Ref.)</sup><sup>15</sup>. Agriculture is the major occupation in this area and arecanut, banana, cotton, ginger, maize, paddy, pepper and sugarcane are the main crops.

Frequent field surveys were conducted in 10 randomly selected villages namely, Anandapura, Avinaahalli, Iduvani, Jannehaklu, Keladi, Kugve, Kudluthota, Shiruru, Talaguppa and Talavata in Sagar taluk during May 2006 to July 2007. Ethno-medicinal information on medicinal plants was recorded through interviews, discussion and field observation with herbal healers and knowledgeable elder people of the study area using a semi-structured questionnaire<sup>16</sup>. Out of 22, 19 were male and 3 female respondents under the age groups of 36 to 79 years. The information about plants and their local names, parts of plant used for preparation of drug, mode of administration and specific comments were documented in the field survey. The ethno-medicinal information obtained was confirmed by cross-checking with respondents and also with the former patients residing in the same or neighboring villages of the study area. The data collected was also compared with the already existing literature<sup>17, 18</sup>. The ethnomedicinal plants were collected from the surrounding villages or forest areas with the help of folk practitioners and identified taxonomically using the standard floras and already identified specimens<sup>19, 20</sup>. The plants were photographed and collected for preparing herbarium and voucher specimens were deposited at the Department of Applied Botany, Kuvempu University, Shankaraghatta.

## Results and Discussion

Local caste and communities in Sagar taluk such as, Adikarnataka, Besta, Brahmin, Ganiga, Idiga, Lambani, Muslim and Vokkaliga practice the herbal medicine, extensively. Ethno-medico-botanical information gathered from herbal practitioners and experienced people of the study area is arranged alphabetically by ailment, followed by the botanical name of plant species, local name, voucher number, family, mode of usage and names and addresses of local herbal healers (Tables 1 and 2).

In the study area, 48 plant species of 44 genera and 31 families were used to treat 25 human and 5 veterinary ailments. Among them, 10 were herbs, 11 shrubs, 19 trees and 8 climbers. Maximum of five plant species of Apocynaceae were used for drug preparation, followed by Verbenaceae (4), Combretaceae (3), Caesalpiniaceae (3), Solanaceae (3) and Fabaceae (2). For the herbal formulation, leaves (49%) were the most preferred plant part, followed by roots (19.60%), bark (17.64%), stem (9.80%), fruit (1.96%) and, some times the whole plant (1.96%). Among the drug formulations, paste (56.25%) and juice (20.83%) formulations were commonly used over the decoction (10.41%), powder (8.33%), ash (2.08%) and raw (2.08%) forms. Herbal practitioners depend chiefly on fresh plant materials from forests around their villages. Dried plant materials were used only upon the non-availability of fresh plant parts. Recommendation of the dosage and duration of the herbal drug depended on the age of the patient and severity of illness. Oral administration (54.16%) is generally preferred for most ailments, while external application (45.83%) is prescribed for skin diseases and wound healing purposes. Skin diseases and wounds were treated by 14 plant species and this is followed by 10 species for respiratory problems, seven for veterinary ailments, four for menstrual disorders, three for nose sore and each two plants for jaundice, diabetes and toothache. In case of bodyache, fever, kidney stone, nerve swelling, snake bite and stomachache, one plant species is used.

In most cases, the rural people of the study area prefer to use single plant species for specific ailments rather than combination of plants. For example, *Ichnocarpus frutescens* R. Br. used in the treatment of bodyache, *Withania somnifera* Dunal for diabetes, *Asparagus racemosus* Willd. for kidney stones, *Terminalia arjuna* (Roxb. ex DC.) Wight & Arn. for headache, *Helicteres isora* Linn. for cough, *Alstonia scholaris* R. Br. for fever and, *Curculigo orchioides* Gaertn. and *Elephantopus scaber* Linn. for dislocated bones and increase lactation in cattle, respectively. On the other hand, a combination of plants was also used to treat certain specific ailments like bone fracture, sore nose and cough. For example, *Cassia auriculata* Linn., *Michelia champaca* Linn. and *Leucas aspera* Spreng. were used in combination to treat cough, while *Vitex negundo* Linn., *Sapindus laurifolius* Vahl and *Leucas aspera* Spreng. for sore nose and, *Gmelina arborea* Roxb. along with *Cocos nucifera* Linn. for bone fracture in cattle.

Table 1—Plant species used to treat human ailments in Sagar taluk of Shimoga district

Ailment	Botanical/Local/Family Name/Voucher No.	Mode of usage	Name and address of local herbal healers in the study area
Asthma	<i>Clerodendrum serratum</i> (Linn.) Moon. Gantu Bharangi Verbenaceae KU/SG/JS 182	Paste of <i>Clerodendrum serratum</i> (Linn.) Moon and <i>Adhatoda zeylanica</i> Medic. leaves (Aadusoge; Acanthaceae; KU/SG/NS 078) mixed with powder of <i>Piper longum</i> Linn. (Hippali; Piperaceae) is taken orally, daily once for 21 days.	Rathnakara Talaguppa, Vill. & P.O. Sagar
Body pain	<i>Ichnocarpus frutescens</i> R.Br., Karibantana balli Apocynaceae KU/SD/SR 411	Root decoction is taken orally, twice a day for 2 days	Kannappa, Gadimane, Jannahaklu, Vill., Shiravanthe(PO), Sagar
Boils and sores	<i>Rauwolfia serpentina</i> Benth., Sarpagandha Apocynaceae KU/BS/HB 025	Leaf ash is applied externally on affected part, till cure.	Mohan Bhat, Talavata, Vill., Kargal (PO)
Cold	<i>Cassia auriculata</i> Linn. Tangadi Caesalpinaceae KU/SD/SR 410	Stem piece ground with leaves of <i>Leucas aspera</i> Spreng. (Tumbe; Lamiaceae; KU/BS/MV 013), <i>Piper nigrum</i> Linn. (Karimenasu; Piperaceae) and <i>Allium sativum</i> Linn. (Bellulli; Alliaceae) into paste and taken orally, for 3-4 days.	Kamamma, Gaddemane, Anandapura (PO)
Cough	<i>Helicteres isora</i> Linn. Balamuri Sterculiaceae KU/SD/SR 437	Leaf juice is taken orally with water for 2-3 days.	K.P. Ramesh, Kudluthota, Varadhamula (PO)
	<i>Embelia ribes</i> Burm. f. Vayu vilanga Myrsinaceae KU/SG/JS 238	Roots ground with lime juice and taken orally with honey, twice a day for 3-4 days.	Bheemanna, Yedehalli (Vill.), Anandapura (PO)
	<i>Cassia auriculata</i> Linn. Tangadi Caesalpinaceae KU/SD/SR 410	Stem piece ground with leaves of <i>Michelia champaca</i> Linn. (Sampigae; Magnoliaceae; KU/SG/NS 221), <i>Leucas aspera</i> , pepper and garlic and filtered. Filtrate taken orally, daily once for 1-2 days.	Parvatamma, Anandapura (PO)
Cuts and wounds	<i>Jasminum malabaricum</i> Wight, Tirugalukone, Oleaceae KU/SD/SR 401	Leaf crushed in lime juice and applied externally on wound, till cure.	Nagaraja, Shiruru (Aalali) (Vi), Maratturu (PO)
	<i>Jasminum arborescens</i> Roxb. Kaadu mallige, Oleaceae KU/SD/SR 402	Leaf juice applied externally on wound, till cure.	Katle Manjappa, Kugve (Vill.)
Diabetes	<i>Withania somnifera</i> Dun. Ashwagandha Solanaceae KU/SG/NS 071	Root powder is mixed with water and taken orally for 15 days.	M. V. Gajanana, Manchale (Vill.)
	<i>Pterocarpus marsupium</i> Roxb. Honne Fabaceae KU/SD/SR 413	Bark powder is taken orally, once a day for 3 weeks.	M. V. Gajanana, Manchale (Vill.)
Dysentery	<i>Cyclea peltata</i> (Lam.) Hook. & Thoms. Haade balli, Menispermaceae KU/SG/JS 156	Leaf paste is mixed with water and taken orally for a day.	Katle Manjappa, Kugve(Vill.)
Fever	<i>Alstonia scholaris</i> R. Br. Maddaale Apocynaceae KU/SD/SH 342	Bark juice is taken orally with rice washed water, for 2 days.	Parameshwarayya, Kargal (PO)

Table 1— Plant species used to treat human ailments in Sagar taluk of Shimoga district —Contd

Ailment	Botanical/Local/Family Name/Voucher No.	Mode of usage	Name and address of local herbal healers in the study area
Headache	<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn. Bilimatti, Combretaceae KU/SG/NS 207	Leaf juice is taken orally and also applied externally over fore head, till cure.	Bheemanna, Yedehalli (Vill.)
	<i>Elephantopus scaber</i> Linn. Nelaganigilu, Asteraceae KU/BS/MG 002	Roots are tied around ears, till cure.	Katle Manjappa, Kugve (Vill.)
Herpes	<i>Memecylon malabaricum</i> Cogn. Ollekudi Melastomataceae KU/SD/SR 544	Leaf paste is mixed with cow's urine and applied on the affected part of the skin, once in a day, till cure.	Parameshwarayya, Kargal (PO)
	<i>Moringa oleifera</i> Lam. Moringaceae, Nuge KU/BS/MU 012	Bark mixed in cow's milk and boiled in copper vessel and applied externally on herpes part, daily twice for a week.	Katle Manjappa, Kugve (Vill.)
Jaundice	<i>Diospyros montana</i> Roxb. Balagane Ebenaceae KU/SG/V 073	Bark paste is mixed with cow's milk and taken orally in the morning, for a week. Likely, leaves ground with jaggery and boiled in water into decoction. Daily 2 teaspoonful of decoction is taken orally, daily once, for 4-5 days.	Katle Manjappa, Kugve (Vill.)
	<i>Datura metel</i> Linn. Ummatti Solanaceae KU/SD/SR 339	Leaf juice is mixed with cow's milk and taken orally for one week.	Mohan Bhat, Talavata (Vill.)
Kidney stone	<i>Asparagus racemosus</i> Willd. Shathavari Asparagaceae KU/BS/AL 004	Root powder mixed with cow's butter-milk and taken orally, for 3-4 days.	M. V. Gajanana, Manchale (Vill.)
Malaria	<i>Tinospora cordifolia</i> Miers. Amruta balli Menispermaceae KU/SG/JS 157	Stem piece ground with pepper and taken orally for 4-5 days.	Ramachandra Bhat, Talavata (Vill.), Kargal (PO)
Menstrual disorders	<i>Hibiscus rosa-sinensis</i> Linn. Daasavaala Malvaceae KU/BS/SM 052	Leaf paste is mixed with cow's milk and taken orally, for 5 days.	Devappa Hegde, Avinahalli (Vill. & PO)
	<i>Terminalia paniculata</i> Roth. Hunaalu Combretaceae KU/BS/V 057	Bark ground with <i>Piper longum</i> (Hippali; Piperaceae) and garlic into paste. Paste is mixed with water and taken orally, early in the morning, for one week.	Nagaraja, Shiruru (Aalali) (Vill.)
Nerve swelling	<i>Connarus wightii</i> Hook. Giligicchi, Connaraceae KU/SD/SR 556	Root ground with <i>Citrus reticulata</i> Blanco (Kanchikayi; Rutaceae) into paste and applied externally around swelling part, twice a day, till cure.	Rama Naika, Iduvane (Vill.), Kargal (PO)
Respiratory problems	<i>Ficus racemosa</i> Linn. Atti mara, Moraceae KU/SG/NS 236	Bark powder is taken orally with cow's milk, for 4-5 days.	M. V. Gajanana, Manchale (Vill. & PO)
Skin allergies	<i>Holarrhena pubescens</i> (Buch.-Ham.) Wall. ex G. Don, Kodasiga Apocynaceae KU/SG/KG 024	Root paste is applied over the infected part of the skin, till cure.	M. V. Gajanana, Manchale (Vill. & PO)
	<i>Ficus asperrima</i> Roxb. Garagatti, Moraceae KU/SD/SR 439	Bark of <i>Ficus asperrima</i> ground with leaves of <i>Vitex altissima</i> Linn. f. (Bharanige; Verbenaceae; KU/SD/SR 559) into paste. Paste is applied externally on infected part of the skin, daily once, till cure.	Mohan Bhat, Talavata (Vill.), Kargal (PO)

Table 1— Plant species used to treat human ailments in Sagar taluk of Shimoga district—*Contd*

Ailment	Botanical/Local/Family Name Voucher No.	Mode of usage	Name and address of local herbal healers in the study area
	<i>Mussaenda frondosa</i> Linn. Bellatte, Rubiaceae KU/SD/TI 211	Leaf paste is applied externally on affected part of the skin, daily twice for 3-4 days.	Katle Manjappa, Kugve (Vill. & PO)
Snake bite	<i>Aristolochia indica</i> Linn. Eeshwriballi Aristolochiaceae KU/SG/JS 098	Root paste is mixed with fresh cow's milk and taken orally.	Rama Naika, Iduvane (Vill.), Kargal (PO)
Sore nose	<i>Vitex negundo</i> Linn. Lakki gida Verbenaceae KU/BS/HB 029	Leaves ground with fruits of <i>Sapindus laurifolius</i> Vahl. (Antuvala; Sapindaceae; KU/SG/JS 272) and leaves of <i>Leucas aspera</i> , pepper and garlic into juice. 3-4 drops of juice put into nostrils, twice a day for one week.	Parvatamma, Anandapura (PO)
Stomachache	<i>Achyranthes aspera</i> Linn. Uttaraani Amaranthaceae KU/BS/GG 034	Root juice with <i>Cuminum cyminum</i> Linn. (Jirige; Apiaceae) seeds is taken orally, for 1-2 days.	Ramachandra Bhat, Talavata (Vill.), Kargal (PO)
Toothache	<i>Centella asiatica</i> Urb. Ondelaga, Apiaceae KU/BS/MU 014 <i>Leucas aspera</i> Spr. Tumbe, Lamiaceae KU/BS/MU 013	Leaf paste is applied over affected part, once in a day, till cure.  Leaf extract is applied over the paining dental part for 1-2 days.	Kannappa, Gadimane, Jannahaklu (Vill.), Shiravanthe(PO)  Durgappa, Keremata (Vill.), Avinahalli (PO)
Urticaria	<i>Santalum album</i> Linn. Shrigandha Santalaceae KU/SG/V 066	Leaf paste is mixed with coconut oil and applied externally over affected part, twice a day, till cure.	Parameshwarayya, Kargal (PO)
Weakness	<i>Mimosa pudica</i> Linn. Muttidare muni Mimosaceae KU/SG/JS 159	Roots are boiled with rhizome of <i>Zingiber officinale</i> Rosc. (Shunti; Zingiberaceae; KU/SG/JS 187) in water and taken orally with cow's milk in the morning, for one week.	M. V. Gajanana, Manchale (Vill. & PO)
Whitlow	<i>Cassia occidentalis</i> Linn. Caesalpiniaceae Elavarige KU/SD/SH 438	Leaves boiled with pepper and garlic in ghee, and applied over infected part of the finger, till cure.	Parvatamma, Anandapura (PO)
Wound	<i>Tinospora cordifolia</i> Miers. Menispermaceae Amruta balli KU/SG/JS 157 <i>Plumeria rubra</i> Linn. Deva kanagile Apocynaceae KU/SD/SH 325 <i>Gliricidia sepium</i> (Jacq.) Kunth. Gobbaradagida Fabaceae KU/SD/SH 388	Leaf paste is applied externally over wound, till cure.  Bark ground into paste applied externally on wound part, daily twice, till cure.	Parvatamma, Anandapura (PO)  Nagaraja, Shiruru (Aalali) (Vill.), Maratturu (PO)
		Leaf paste is applied on affected part, daily once, till cure.	Govindappa, Talaguppa (Vill.& PO)

Table 2— Plant species used to treat veterinary ailments in Sagar taluk of Shimoga district

Ailment	Botanical/Local/Family Name/Voucher No.	Mode of usage	Names and addresses of local herbal healers in the study area
Bone fracture	<i>Gmelina arborea</i> Roxb. Shivani, Verbenaceae KU/SD/SH 333	Bark ground with coconut fruit pulp and egg albumin in ghee into paste. Paste is applied over the fractured bones and also taken orally, till cure.	Katle Manjappa, Kugve (Vill. & PO)
Foot and mouth disease	<i>Terminalia bellirica</i> Roxb. Taare, Combretaceae KU/SG/V 071	One handful of bark ground into paste. Paste s applied externally on foot part of cattle for 2-3 days.	Doddappa, Keremata (Vill.), Avinahalli (PO)
Increase lactation	<i>Elephantopus scaber</i> Linn. Nelaganigilu, Asteraceae KU/BS/MG 002	Leaves crushed with cattle food and given to cattle orally for one week.	Katle Manjappa, Kugve (Vill & PO)
Dislocation of bones in cattle	<i>Curculigo orchioides</i> Gaertn. Nelathengu, Hypoxidaceae KU/SG/JS 146	Leaves crushed with cooking oil and given to cattle for one week.	Katle Manjappa, Kugve (Vill. & PO)
	<i>Rubia cordifolia</i> Linn. Seeraguttiballi Rubiaceae, KU/SG/JS 176	Stem piece and leaves are crushed into paste and given to cattle with bran, daily once for 3-4 days.	Rama Naika, Iduvane (Vill.), Kargal (PO)
	<i>Tylophora indica</i> (Burm. f.) Merrill, Adumuttada balli Asclepiadaceae KU/SD/SR 427	Stem juice is given to cattle, daily twice for 2-3 days.	Kannappa, Gadimane, Jannahaklu (Vill.), Shiravanthe(PO)
Wound and worms	<i>Naravelia zeylanica</i> DC. Talevadetada balli Ranunculaceae KU/SG/JS 174	Whole plant paste is applied externally on affected part, 2-3 days.	Kannappa, Gadimane, Jannahaklu (Vill.), Shiravanthe(PO)

Some of the new uses, not documented in the ethno-medicinal literature are: roots of *Connarus wightii* Hook. for nerve swelling, bark of *Terminalia paniculata* Roth. to treat menstrual disorders, bark and leaves of *Ficus asperrima* Roxb. and *Vitex altissima* Linn.f. in combination for skin allergies, leaves of *Centella asiatica* (Linn.) Urban. for toothache, leaves of *Curculigo orchioides* Gaertn. for dislocation of bones in cattle, leaf paste of *Cassia occidentalis* Linn. for whitlow, leaves of *Datura metel* Linn. for jaundice, and leaves of *Terminalia arjuna* (Roxb. ex DC.) Wight & Arn. and *Vitex negundo* Linn. for headache and sore nose, respectively.

Some of the plants used as medicine in Sagar taluk are also mentioned in the Ayurvedic system of medicine for the same purposes<sup>21</sup>. For example, *Alstonia scholaris* for fever, *Aristolochia indica* Linn. for snakebite, *Achyranthes aspera* Linn. for stomachache, *Memecylon malabaricum* Cogn. for herpes, *Pterocarpus marsupium* Roxb. for diabetes and *Hibiscus rosa-sinensis* Linn. for menstrual disorders. These observations suggest that the traditional knowledge of herbal medicine could have been largely influenced by Ayurveda since a long time.

Apart from this, the medicinal uses of herbal drugs and the methods of drug preparation differ from one

ethnic/tribal group to another or region to region. For example, people of Ethiopia use *Achyranthes aspera* for the treatment of herpes zoster<sup>22</sup>, while Jaunsari tribes of Garhwal Himalaya use this plant for muscular cramps<sup>7</sup> and Jaintia tribes of Assam use it to cure boils<sup>8</sup>. However, in the study area, *A. aspera* is used for treating stomachache.

As far as the veterinary practices are concerned, the rural folk of Uttara Kannada district use a mixture of *Machilus macrantha* Nees and *Cinnamomum wightii* Meisn. for the treatment of bone fracture<sup>12</sup>, whereas local traditional practitioners in Bhadra Wildlife Sanctuary use *Holarrhena antidysenterica* (Linn.) Wall. for the same ailment<sup>13</sup>. However, folk healers in the study area use *Gmelina arborea* Roxb. to treat bone fracture. Like wise, local people of Koch Bihar district of West Bengal use *Cuscuta reflexa* Roxb.<sup>6</sup>, while rural people of Saurashtra in Gujarat use *Cyamopsis tetragonoloba* (Linn.) Taub. as galactogogue in cattle<sup>3</sup>. On the other hand, *Elephantopus scaber* Linn. is used for the same purpose by the Gowlis of Uttara Kannada district<sup>10</sup> and the local practitioners of the study area, as well.

### Conclusion

In Sagar taluk, there are only eight primary healthcare centers and five healthcare units for human

and seven veterinary hospitals with poor healthcare facilities<sup>15</sup>. This forced the rural people of the study area to adopt their own traditional herbal medicine for their healthcare. Rural folk practitioners and elder people of Sagar taluk utilize a number of plant species grown around their house holds for various medicinal purposes. However, the younger generation by ignoring their ancestral traditional medicine is inclining towards the allopathic medicine. Since, several bioactive compounds are being extracted from traditional medicinal plants, they are in great demand in pharmaceutical industries. The phytochemical analysis and pharmacological investigations of ethnomedicinally important plants would help in developing novel drug(s) to treat chronic ailments.

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