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Shivanand S. Bhat and L. Rajanna

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# Ethnobotanical Study of Medicinal Plants Used to Treat Human Diseases from the rural Homegardens of Honnavar Taluk of Uttara Kannada District, Karnataka, India

Shivanand S. Bhat<sup>\*1-2</sup> and L. Rajanna<sup>3</sup>

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## ABSTRACT

Recent days there has been an increasing interest in the study of medicinal plants with their traditional use and related pharmacological research all over the World. This research enumerated medicinal plants used by home gardens of Honnavar Taluk of Uttara Kannada district, Karnataka, India. The aim of this study is to collect and identify the plants used in medicinal therapy by the local people and professional traditional healers with quantitative analysis. An ethnobotanical survey was carried out during August 2020 to August 2021 among the Uttara Kannada people in ten villages of Honnavar Taluk region in Karnataka, India. The information was obtained through open and semi-structured face-to-face interviews with the local knowledgeable people and professional traditional healers. The statistical analysis, use value, family use value, informants' consensus factor was calculated for the quantitative study of ethnomedicinal data. A total of 38 home garden plant species belonging 23 families dominated by the families were enumerated with detailed information on parts used, method of preparation, mode of administration and ailments treated. Leaves were mostly used plant part and predominantly used herbal preparations were juice. The present study demonstrated the need for importance of documenting the traditional knowledge of home garden dwelling people.

**Key words:** Rural home garden, Plant diversity, Honnavar, Medicinal plants, Diseases

India's traditional system of medicine is related to richness of plant and cultural diversity. The indigenous knowledge on medicinal plant utilization not exceeding the resilience of surrounding environment is regarded as an important measure of plant biodiversity conservation. Apart from modern systems of medicines, even today people rely on herbal plants for primary healthcare. This dependency is even more in rural areas where ethnobotanical use of plants has been known since time immemorial. This is because of lack of primary healthcare centers; besides, medicinal plants are easily available natural products, easily formula table and cost-effective with no side effects. Tribal people depend on forest for their survival and are aware of the medicinal uses of plants in their surroundings. The traditional folk medicine is mostly

unscripted, has been handed down orally from generation to generation [1-2].

Traditional herbal medicine is still an important component of human healthcare in world-wide. According to the world health organization (WHO), about 80% of the world's people depend on traditional indigenous medicines, since a large majority of rural people in the developing countries still use these medicines as the first defense in healthcare. The reliance of people on ethno-medicine has been for seasons of cost-effectiveness, acceptability, biomedical benefits and accessibility. There has been a continuous growth of demand for herbal medicines globally. The demand has been increasing as a result of growth of human population, habitat loss and alteration, over exploitation, overgrazing, deforestation and the frequently inadequate provision of modern medicine [3]. In recent years, use of ethnobotanical information in medicinal plant research has gained considerable attention in segments of the scientific community. During the last two decades, some notable progress has been made in the field of medicinal plants and their traditional use in different parts of India. Indigenous use of medicinal plants all over the world precedes the origin of modern medicine in healthcare system. The flowering plants used for medicinal purpose worldwide are estimated to be about 50,000 out of total 422,000 flowering plant species. World Health Organization (WHO) estimated that prescribed drug (25%), consider drug (11%) and precursor compound produced as a result of various synthetic drugs are of plant origin.

\* **Shivanand S. Bhat**

✉ shivanandbhatgas123@gmail.com

<sup>1</sup> Research and Development Center, Bharathiar University, Coimbatore - 641 046, Tamil Nadu, India

<sup>2</sup> Department of Botany, Government Arts and Science College, Karwar - 581 301, Karnataka, India

<sup>3</sup> Department of Botany, Bangalore University, Jnanabharathi Campus, Bangalore - 560 056, Karnataka

Treatment of diseases with medicinal plants is more beneficial than synthetic and modern medicines as, ease of use, treatment efficacy, affordable cost and minimal side effects [4].

Ethnobotanical studies are very important to reveal the past and present culture about plants in the world and preserving indigenous knowledge on medicinal plants. The quantitative ethnobotanical studies were utilized to detect the plant uses as food, veterinary medicine, human health care medicines and economically important [5]. However, many ethnic groups are failing to retain their collective knowledge of such medicinal plant use. Younger generations are not interested to follow these traditional medicinal practices from their ancestors and are migrating to lucrative jobs in more developed nearby urban areas. In rural communities, medicinal plants expanded attention due to their effectiveness, lack of modern medical alternatives, rising costs of allopathic medicines and cultural preferences [6]. Many ethnic groups rely on wild plants for food and many other purposes from birth to death and traditionally all herbal preparations were developed from plants either as simple or complex form of crude extracts [7]. In India, attention has been paid in the field of ethnobotanical studies by various researchers and hundreds of reports has been published in the last decades [8-10] however, still much effort is necessary to save this treasure that is being diminished with the passage of time.

The Western Ghats of India is one of the biodiversity hotspots in the world. The thick evergreen forests of Uttara Kannada district in the Central Western Ghats are home to several ethnic communities and is a rich center of traditional medicinal systems. Several documentations have been made so far on the use of ethnomedicinal plants in different parts of Uttara Kannada district in the form of regional documentation on different ethnic communities [11-12], on specific ailments like poisonous snake bites, skin diseases, veterinary ailments, reproductive health, herpes, bone fracture, wounds, and skin diseases [13-17]. In this scenario, the present study was conducted to document the ethnomedicinal knowledge of the home gardens of Honnavar Taluk of Uttara Kannada district, Karnataka, India. The main objective of this study is to analyze the documented medicinal plants through quantitative indicators and the extent of current knowledge of traditional healers on plants in the study area.

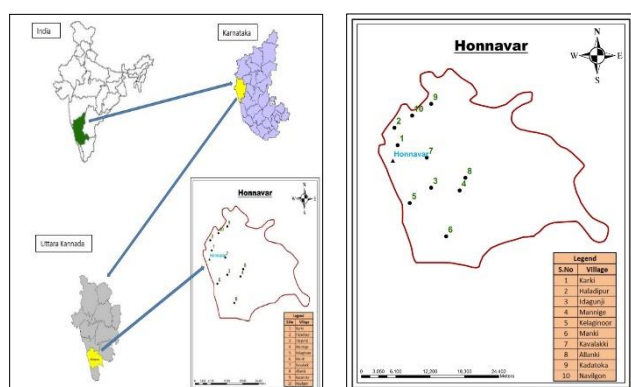


Fig 1 Map of the study area

## MATERIALS AND METHODS

Honnavar is one of the Coastal Taluks of Uttara Kannada district of Karnataka state of India. It is situated between 14° 06' 15" to 14° 26' 00" latitude and 74° 24' 40" to 74° 44' 45" longitude. It is surrounded by the West Coast and the Western Ghats. Vegetation in this region are Moist deciduous and Evergreen. The total geographical area of the taluk is 756.15 sq

kms. The present study was conducted in 10 villages of Honnavar taluk namely Karki, Haladipur, Mannige, Allanki, Kavalakki, Idagunji, Navilgon, Kelaginoor, Manki and Katatoka shown in (Fig 1).

People of this region represent a mixture of rich ethnic and cultural diversity. Agriculture, Mining, Fishing, forest produce and firewood gathering, small scale business, etc. are the main work of the people around. Cashew nut (*Anacardium occidentale*), Paddy (*Oryza sativa*), Coconut (*Cocos nucifera*) and Areca nut (*Areca catechu*) are the major commercial crops cultivated in the study area.

### Data collection

The study was conducted in the 10 villages of Honnavar Taluk, Uttara Kannada district of Karnataka, India. Frequent field trips were undertaken to gather information about the home gardens from August 2020 to August 2021. A total of 50 Home-gardens of different communities were selected for medicinal plant studies. Medicinal plants cultivated within the compounds of individual houses were recorded. Detailed survey of the ethnobotanical studies was made in the home gardens of selected household (Taking each home garden as a sampling unit). The senior most household members were interviewed in local language (Kannada and Konkani) to gather information about the plant forms, local names, part used and the uses of plant species, growth habits recorded.

### Selection of participants

A total of 40 participants (26 men and 14 women) were selected for collecting information about the plant-based medicines used for their family and based on their traditional knowledge on plants and medicine. Techniques employed for data collection were semi structured interviews, group discussion, guided field walks, and observations with participants. Semi structured interviews were undertaken based on checklist of questions prepared in English. Plants were then identified with the help of local flora, and other relevant literature [18-19].

### Data analysis

Collected ethnobotanical data were entered into Excel spreadsheet 2010 and summarized using descriptive statistical methods percentage, tables, and graphs. Informants consensus factor (ICF) was calculated for each category to identify the agreements of the participants on reported cures for the group of ailments. ICF was calculated as follows:

$$ICF = \frac{nur - nt}{nur} - 1$$

Where ICF is informant's consensus factor, nur is number of use citation in each category, and nt is number of species used.

## RESULTS AND DISCUSSION

The sizes of home gardens studied ranging from 0.01ha to 0.05ha, and the average size being 0.02ha. Of the total 50 home gardens surveyed, 38 medicinal plant species were recorded shown in (Table 1). Demographic characteristics of the informants in the present study were determined and recorded through face-to-face interviews with 40 informants in the 10 villages of Honnavar Taluk, Uttara Kannada district of Karnataka, India. Of which, male informants (26) were dominating women informants (14) in the practice of traditional medicine since most of the women in the tribal families are not interested to practice herbal medicines. The informants were learned this knowledge from their ancestors, other family

members and neighbours, etc. The medicinal plants knowledge shared by the professional traditional healers and local people who are practicing herbal medicines is totally different with each other due to the way of learning medicinal practices from their ancestors. Most of the interviewed informants were illiterate, only a few people had primary, secondary and adult

education. The professional healers were treating patients on payment basis based on the nature of disease, type of disease, availability of plant parts in their environs and duration of the treatment. They were also collecting medicinal plant parts in the home gardens and selling them in nearby market, which is situated 20 km away from their village.

Table 1 List of Medicinal plants cultivated in the home gardens

S. No	Botanical name	Family	Vernacular name	Habit	Medicine used for
01	<i>Acorus calamus</i> L.	Araceae	Bhaje	Herb	Gastro intestinal problems
02	<i>Adhatoda zeylanica</i> Medikus	Acanthaceae	Aadusoge	Shrub	Cough and Fever
03	<i>Aegle marmelos</i> (L.) Correa	Rutaceae	Bilva	Tree	Skin problem
04	<i>Aerva lanata</i> (L.) Juss.	Amaranthaceae	Bilihindi soppu	Herb	Kidney stone
05	<i>Aloe vera</i> (L.) Burm.F.	Liliaceae	Lolesara	Herb	Hair fall
06	<i>Alstonia scholaris</i> (L.) R.Br.	Apocynaceae	Haalemara	Tree	Skin problem
07	<i>Andrographis paniculate</i> (Burm.f.) Wall	Acanthaceae	Kirath kaddi	Herb	Fever
08	<i>Asparagus racemosus</i> Willd.	Liliaceae	Shatavari	Climber	Gastro intestinal problems
09	<i>Calotropis gigantea</i> (L.) R.Br.	Asclepiadaceae	Ekke	Shrub	Skin problem
10	<i>Cardiospermum halicacabum</i> L.	Sapindaceae	Agni balli	Climber	Joint pain
11	<i>Centella asiatica</i> (L.) Urban	Apiaceae	Ondelaga	Herb	Hair fall
12	<i>Citrus aurantifolia</i> Swingle	Rutaceae	Nimbe	Shrub	Fever
13	<i>Coleus amboinicus</i> Lour.	Lamiaceae	Sambaarasoppu	Herb	Fever
14	<i>Costus speciosus</i> (Koenig) Smith	Zingiberaceae	Narikabba	Shrub	Diabetes
15	<i>Curcuma longa</i> L.	Zingiberaceae	Arishina	Herb	Skin problem
16	<i>Cymbopogon citratus</i> (DC.) Stapf.	Poaceae	Majjige hullu	Herb	Gastro intestinal problems
17	<i>Cynodon dactylon</i> (L.) Pers	Poaceae	Garika	Herb	Gastro intestinal problems
18	<i>Datura metel</i> L.	Solanaceae	Keppottu soppu	Shrub	Depression
19	<i>Ficus racemosa</i> L.	Moraceae	Attimara	Tree	Gastro intestinal problems
20	<i>Gymnema sylvestre</i> (Retz.) R.Br.	Asclepiadaceae	Madhunashini	Climber	Diabetes
21	<i>Holarrhena pubescens</i> (Buch-Ham) Wall.	Apocynaceae	Kodasiga	Shrub	Dysentery
22	<i>Ixora coccinea</i> L.	Rubiaceae	Kusumaale hannu	Shrub	Skin problem
23	<i>Maranta arundinaceae</i> L.	Marantaceae	Araroot	Herb	Dysentery
24	<i>Myristica fragrans</i> Houtt	Myristicaceae	Jaai-kaai	Tree	Swellings
25	<i>Ocimum basilicum</i> L.	Lamiaceae	Kaamakastoori	Herb	Hair fall
26	<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Tulasi	Herb	Skin problems
27	<i>Phyllanthus emblica</i> L.	Euphorbiaceae	Nellimara	Tree	Diabetes
28	<i>Piper betle</i> L.	Piperaceae	Vilyada ele	Climber	Gastro intestinal problems
29	<i>Piper longum</i> L.	Piperaceae	Hippali	Climber	Joint pain
30	<i>Piper nigrum</i> L.	Piperaceae	Kaalumenasu	Climber	Joint pain
31	<i>Plumbago indica</i> L.	Plumbaginaceae	Kempuchitramula	Shrub	Toothache
32	<i>Rauvolfia serpentina</i> (L.) Benth.	Apocynaceae	Sarpagandha	Shrub	Fever
33	<i>Ricinus communis</i> L.	Euphorbiaceae	Haralu oudala	Shrub	Intestinal worms
34	<i>Syzygium aromaticum</i> (L.) Merr. & Perry	Myrtaceae	Lavanga	Tree	Tooth ache
35	<i>Tinospora cordifolia</i> (Willd.) Hook.	Menispermaceae	Amratha balli	Climber	Fever
36	<i>Vitex negundo</i> L.	Verbenaceae	Nukki gida	Shrub	Skin problem
37	<i>Zanthoxylum rhetsa</i> (Roxb.) DC.	Rutaceae	Jummana kaai	Tree	Skin problem
38	<i>Zingiber officinale</i> Roscoe	Zingiberaceae	Shunti	Herb	Gastro intestinal problems

#### Medicinal plant diversity and their uses

In the present study, 38 species of medicinal plants belonging to 23 families for the treatment of various ailments were documented (Table 2). Of the collected ethnomedicinal plants, 13 were herbs (34.21%) followed by shrubs (28.95%), climbers (18.42%) and trees (18.42%) (Table 3). The recurrent use of herbaceous plants among the indigenous communities is a result of wealth of herbs in their environments [20]. The family Zingiberaceae, Rutaceae, Piperaceae, Lamiaceae and

Apocynaceae (3 plants, 7.90%) is most speciose family in this study followed by Acanthaceae, Asclepiadaceae, Euphorbiaceae, Liliaceae and Poaceae (2 plants each, 5.26%), Apiaceae, Araceae, Maranthaceae, Menispermaceae, Moraceae, Myristicaceae, Myrtaceae, Plumbaginaceae, Rubiaceae, Sapindaceae, Solanaceae, Verbenaceae and Amaranthaceae (1 plants each, 2.63%). Of the documented plant species were purchased from the nearby herbal markets for the preparation of various herbal medicines.

Table 2 Total number of families and distribution of species per family

S. No	Family	No. of species	Percent of species	S. No	Family	No. of species	Percent of species
01	Apiaceae	01	2.63%	13	Amaranthaceae	01	2.63%
02	Araceae	01	2.63%	14	Acanthaceae	02	5.26%
03	Maranthaceae	01	2.63%	15	Asclepiadaceae	02	5.26%
04	Menispermaceae	01	2.63%	16	Euphorbiaceae	02	5.26%

05	Moraceae	01	2.63%
06	Myristicaceae	01	2.63%
07	Myrtaceae	01	2.63%
08	Plumbaginaceae	01	2.63%
09	Rubiaceae	01	2.63%
10	Sapindaceae	01	2.63%
11	Solanaceae	01	2.63%
12	Verbenaceae	01	2.63%

17	Liliaceae	02	5.26%
18	Poaceae	02	5.26%
19	Apocynaceae	03	7.90%
20	Lamiaceae	03	7.90%
21	Piperaceae	03	7.90%
22	Rutaceae	03	7.90%
23	Zingiberaceae	03	7.90%

Table 3 Growth habit analysis

Habit	No. of species	Percent of species
Climber	7	18.42
Herb	13	34.21
Shrub	11	28.95
Trees	7	18.42

#### Plant parts used

Among the plant parts used for preparation of medicine, leaves (14 reports,) were most frequently used individually or in combination with other plant parts. It was followed by whole ripe fruit (8 reports), seed (1 report), root (4 reports), bark (3reports), rhizome (5 reports), stem (1 reports), flower (2 reports) (Table 4). Likewise, most of the communities around the World using leaves for the preparation of herbal medicines because of the availability of leaves throughout the year and can be easily collected from the forests [21-24].

#### Preparation of herbal medicines

Medicinal preparation from raw material of the plants is one of the important methods in herbal therapy [25]. The informants in the present survey were practicing nine different types of preparation methods. Of which mostly used herbal preparations were juice (16 reports) and paste (11 reports) followed by takendecoctio (8reports) andpowder (4 reports,) (Table 4). The decoction was prepared by boiling the plant in water until the volume of water reduced to half of its original volume. The infusion was prepared by soaking the plant

material in water or hot water for some time. Paste was prepared by grinding the raw (fresh or dried) material of the plant part with water, oil or ghee. Juice was prepared by crushing the fresh raw material and separates the juice after filtration. Powder was prepared by grinding the shade dried raw materials.

For herbal preparations with bitter taste, some sweet ingredients (sugar, honey, palm sugar) were added during the preparation of medicines to reduce bitterness. The same observation was also reported among the Kalanguya tribe in Philippines [26]. Chander *et al.* [27] revealed that coconut milk, rainwater, seawater, pig blood, toddy, pig ghee and honey are some of the important ingredients used by Nicobarese tribal people in India; of which water and coconut oil are common and readily available ingredients since, good solubility of active components in water made it commonly used in herbal remedies by practitioners for oral administration. There were several application methods followed by informants in the Honnavar Taluk, Uttara Kannada district of Karnataka, India, in which oral application (25reports) was most commonly followed than other mode of administration dermal (13 reports). Likewise, in most of the previous studies oral application was reported as most frequently used approach for the treatment of various types of ailments. In the meantime, dermal application was also important way of remedy for the ailments like skin infection, wound, poison bite, rheumatic pain, body pain, body strength, burns and head ache [28]. Physiologically topical mode of administration provides better action and also remedial power in herbal medicine [29].

Table 4 Ethnomedicinal plants used by the studied people in Honnavar Taluk, Uttara Kannada district of Karnataka, India

S. No	Botanical name	Ailment	Part used	Mode of preparation	Route of administration
01	<i>Acorus calamus</i> L.	Gastro intestinal problems	Rhizome	Approximately 15 to 20 ml of Decoction prepared from dried powdered rhizome is taken in empty stomach twice a day	Oral
02	<i>Adhatoda zeylanica</i> Medikus	Fever	Leaves	Approximately 15 to 20 ml of Decoction prepared from dried powdered leaf is taken in empty stomach twice a day	Oral
03	<i>Aegle marmelos</i> (L.) Correa	Skin problem	Leaves	Fresh leaves are crushed with turmeric powder then boiled in coconut oil and applied on the fungal infected area of the body	Dermal
04	<i>Aerva lanata</i> (L.)Juss.	Kidney stone	Leaves	Approximately 50 ml of Decoction prepared from dried powdered leaf is taken in empty stomach twice a day	Oral
05	<i>Aloe vera</i> (L.) Burm. F.	Hair fall	Leaves	Gel in the leaf is crushed with the leaves of China rose and applied on the hair once in a week for about 30 minutes and washed	Dermal
06	<i>Alstonia scholaris</i> (L.)R.Br.	Skin problem	Bark	Approximately 50 ml of Decoction prepared from the fresh bark is taken in empty stomach twice a day	Oral
07	<i>Andrographis paniculate</i> (Burm.f.) Wall	Fever	Leaves	Approximately 20-30ml of Decoction prepared from the fresh leaves is taken in empty stomach twice a day	Oral
08	<i>Asparagus racemosus</i> Willd.	Gastro intestinal problems	Root	Dried powdered root is boiled in milk (50 ml) and taken after the dinner	Oral
09	<i>Calotropis gigantea</i> (L.) R.Br.	Skin problem	Bark	Paste of dried bark prepared in turmeric powder is applied on the fungal infected area	Dermal



10	<i>Cardiospermum halicacabum</i> L.	Joint pain	Leaves	Paste of fresh leaves crushed in black pepper is boiled in coconut oil and is applied	Dermal
11	<i>Centella asiatica</i> (L.) Urban	Hair fall	Rhizome	Crushed rhizome is boiled in coconut oil filtered and applied on the hair	Dermal
12	<i>Citrus aurantifolia</i> Swingle	Fever	Fruit	Rind of fruit is boiled in water and black pepper powder. 30 ml of filtered extract is mixed with equal quantity of milk and jaggery is taken after food	Oral
13	<i>Coleus amboinicus</i> Lour.	Fever	Leaves	10 ml of crushed leaves is mixed with honey is taken before food	Oral
14	<i>Costus speciosus</i> (Koenig) Smith	Diabetes	Leaves	50 ml of extract prepared from the dried powdered leaves taken before food twice a day	Oral
15	<i>Curcuma longa</i> L.	Skin problem	Rhizome	Paste prepared from the fresh rhizome is applied on the infected region on the skin	Dermal
16	<i>Cymbopogon citratus</i> (DC.) Stapf.	Gastro intestinal problems	Leaves	50 ml of extract prepared from the dried powdered leaves taken before food twice a day	Oral
17	<i>Cynodon dactylon</i> (L.) Pers.	Gastro intestinal problems	Leaves	50 ml of extract prepared from the dried powdered leaves taken before food twice a day	Oral
18	<i>Datura metel</i> L.	Depression	Fruit	Dried powdered seed in mixed with curd and is applied on the head	Dermal
19	<i>Ficus racemosa</i> L.	Gastro intestinal problems	Bark	50 ml of extract prepared from the fresh or dried bark is taken before food twice a day	Oral
20	<i>Gymnema sylvestre</i> (Retz.) R.Br.	Diabetes	Leaves	10 ml of extract prepared from the dried powdered leaves taken before food in a day	Oral
21	<i>Holarrhena pubescens</i> (Buch-Ham) Wall.	Dysentery	Root	10 ml of paste of root prepared in lemon fruit is taken. (Maximum twice after dysentery)	Oral
22	<i>Ixora coccinea</i> L.	Skin problem	Flower	Fresh flower is boiled in coconut oil along with turmeric powder and is applied	Dermal
23	<i>Maranta arundinaceae</i> L.	Dysentery	Rhizome	A tea spoon of powder prepared from the rhizome is mixed in 100 ml water and is taken.	Oral
24	<i>Myristica fragrans</i> Houtt	Joint pain	Fruit	Aril of Nutmeg is powdered with 5 to 8 black pepper seeds and paste is prepared in clay and is applied	Dermal
25	<i>Ocimum basilicum</i> L.	Hair fall	Seeds	Soaked seed is mashed with the petals of Chaina rose and is applied on the hair	Dermal
26	<i>Ocimum tenuiflorum</i> L.	Skin problems	Leaves	Crushed fresh leaves mix with turmeric powder and applied on the infected part	Dermal
27	<i>Phyllanthus emblica</i> (L.)	Daibetes	Fruit	A 50 ml of decoction prepared from a tea spoon of dried powdered rind of gooseberry fruit and equal quantity of dried powdered Jamoon seeds is taken in empty stomach twice a day	Oral
28	<i>Piper betle</i> L.	Gastro intestinal problems	Leaves	A fresh leaf is chewed with beetle nut after food	Oral
29	<i>Piper longum</i> L.	Intestinal worms	Fruit	A tea spoon of powdered fruit is mixed in hot water and taken in empty stomach	Oral
30	<i>Piper nigrum</i> L.	Joint pain	Fruit	A tea spoon of powdered black pepper is mixed with 20 ml of coconut oil after boiling it is applied on the body	Dermal
31	<i>Plumbago indica</i> L.	Toothache	Root	Powdered root is directly placed in the tooth cavity and then washed.	Oral
32	<i>Rauvolfia serpentina</i> (L.) Benth.	Fever	Root	50 ml of decoction of powdered root is taken after food twice a day.	Oral
33	<i>Ricinus communis</i> L.	Intestinal worms	Fruit	3 to 5 seeds are crushed and drink with a cup of water in empty stomach.	Oral
34	<i>Syzygium aromaticum</i> (L.) Merr.&Perry	Tooth ache	Flower	Crushed dried flower bud is directly applied on the infected area.	Oral
35	<i>Tinospora cordifolia</i> (Willd.) Hook.	Fever	Stem	Matured stem is boiled in water and 50 ml of decoction is taken in empty stomach twice a day	Oral
36	<i>Vitex negundo</i> L.	Skin problem	Leaves	Paste of fresh leaves prepared in turmeric powder is applied on the fungal infected area	Dermal
37	<i>Zanthoxylum rhetsa</i> (Roxb.) DC.	Tooth ache	Fruit	Crushed fresh fruit is directly applied on the infected area	Oral
38	<i>Zingiber officinale</i> Roscoe	Gastro intestinal problems	Rhizome	The rhizome is crushed and boiled with cow milk and then taken	Oral

*Informant consensus factor*

The ailment categories with highest ICF value indicate the degree of knowledge sharing among the informants of the study area to treat particular ailment by particular plant species. The ICF values of 11 ailment categories were computed using the recorded use reports by informants in the study area and number of taxa employs. The ICF value of different ailment categories were ranged from 0.37 to 1 (Table 5). The highest ICF value was recorded for Kidney stone with 1 followed by Tooth ache with 0.89, Hair fall and Dysentery (each with 0.83), Diabetes with 0.8, Joint pain with 0.75, Fever with 0.70, Gastro Intestinal problem with 0.41 and Skin problem with 0.37. Most of the ailment categories in the present study were recorded

with highest ICF; similarly, Abe and Ohtani [30] reported that ring-worm infection (*Senna alata* (L.) Roxb.), sore eye (*C. inophyllum* L.) and toothache (*O. cochinchinense* (Lour.) Merr.) were highest ICF of 1.00 among the indigenous people of Batan Island in the Philippines. The ailment categories with high ICF is a result of several use reports for a single species or a few species, for example 32 use reports corresponding to only 3 species gives the ICF of 0.93 for GD. The ailment categories like GIA, GUA, RSD, DID and SMSD were reported with 34, 24, 21, 19 and 17 species of plants, respectively. The high ICF occurring ailment category reflects a high level of homogeneity among the informants in different villages of the study area regarding the medicinal use of a species [31].

Table 5 Informant consensus factor by categories of diseases in the study area

S. No	Disease categories	No. of species	Use citation	Informant consensus factor
1	Gastro intestinal problem	08	13	0.41
2	Skin problem	06	09	0.37
3	Fever	06	18	0.70
4	Hair fall	03	13	0.83
5	Joint pain	03	09	0.75
6	Diabetes	03	11	0.8
7	Tooth ache	03	20	0.89
8	Dysentery	02	07	0.83
9	Intestinal worms	02	02	0
10	Kidney stone	01	06	1
11	Dipression	01	01	0

**CONCLUSION**

The research indicated that, the study area has plenty of medicinal plants to treat simple and complicated human ailments. Many local traditional people in the studied part of Honnavar Taluk, Uttara Kannada district of Karnataka, India is still continued to depends on medicinal plants in home gardens, because well-knowledge healers have good interactions with patients and this would improve the quality of healthcare delivery. Further attention is necessary on plant species which are having high fidelity level. The plants with high use value and informant consensus factor in the study recommended that, they can be ethnobotanically useful and provide the researches

with a quantitative tool to examine the relationship between taxonomic groups based on their ethnopharmacological uses. There is no doubt that the 38 new recorded plant species are awaiting search for new uses. So, further scientific assessment of these medicines for phytochemical, biological and clinical studies is however greatly needed. The present research work indicates that research projects should be designed in priority on this area home garden for the pharmacological evaluation and conservation of medicinal plants of this area home garden.

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**LITERATURE CITED**

1. Gupta R, Vairale MG, Deshmukh RR, Chaudhary PR, Wate SR. 2010. Ethnomedicinal uses of some plants used by Gond tribe of Bhandara district, Maharashtra. *Indian Journal of Traditional Knowledge* 9(4): 713-717.
2. Rajakumar N, Shivanna MB. 2010. Traditional Herbal Medicinal Knowledge in Sagara Taluk of Shimoga District. *Indian Journal of Natural Products and Resources* 1(1): 102-108.
3. Savikin K, Zdunic G, Menokovic N, Zivkovic J, Ujic N, Terescenko M, Bigovic D. 2013. Ethnobotanical study on traditional use of medicinal plants in South Western Serbia, Zlatibor district. *Journal of Ethnopharmacology* 146: 803-810.
4. Nimasow, Gibji, Ngupok, Ringu, Nimasow, Oyi D. 2012. Ethnomedicinal knowledge among the Adi tribes of lower Dibang valley district of Arunachal Pradesh, India. *Journal of Pharmacy* 3(6): 2230-8407.
5. Upadhyay B, Singh KP, Kumar A. 2011. Ethno veterinary uses and informants consensus factor of medicinal plants of Sariska region, Rajasthan, India. *Journal of Ethnopharmacology* 133: 14-25.
6. Kim H, Song MJ. 2013. Ethnomedicinal practices for treating liver disorder of local communities in the southern regions of Korea. Evidence Based Complement. *Alternative Medicine*. <http://dx.doi.org/10.1155/2013/869176>.
7. Ayyanar M, Subash-Babu P, Ignacimuthu S. 2013. Eugenia jambolana Lam., a novel therapeutic agent for diabetes: folk medicinal and pharmacological evidences. *Complement. Ther. Med.* 21: 232-243.
8. Ayyanar M, Ignacimuthu S. 2011. Ethnobotanical survey of medicinal plants commonly used by Kani tribals in Tirunelveli hills of Western Ghats, India. *Journal of Ethnopharmacology* 134: 851-864.
9. Chellappandian M, Mutheeswaran S, Pandikumar P, Duraipandiyani V, Ignacimuthu S. 2012. Quantitative ethnobotany of traditional Siddha medicinal practitioners from Radhapuram taluk of Tirunelveli district, Tamil Nadu, India. *Journal of Ethnopharmacology* 143: 540-547.
10. Yabesh JEM, Prabhu S, Vijayakumar S. 2014. An ethnobotanical study of medicinal plants used by traditional healers in Silent valley of Kerala, India. *Journal of Ethnopharmacology* 154: 774-789.

11. Bhat P, Hegde GR, Hegde G, Mulgund GS. 2012. Ethnomedicinal practices in different communities of Uttara Kannada district of Karnataka for treatment for wounds. *Journal of Ethnopharmacology* 143: 501-514.
12. Achar GS, Rajkumar N, Shivanna MB. 2010. Ethno-medico-botanical knowledge of Khare-vokkaliga Community in Uttara Kannada District of Karnataka, India. *Journal of Comp. Int. Med.* 7: 1-18.
13. Bhandary MJ, Chandrashekhara KR. 2011. Herbal therapy for herpes in the ethnomedicine of coastal Karnataka. *Indian Journal of Traditional Knowledge* 10: 28-52.
14. Bhat P, Hegde GR, Hegde G, Mulgund GS. 2014. Ethnomedicinal plants to cure skin diseases-an account of the traditional knowledge in the coastal parts of Central Western Ghats, Karnataka, India. *Journal of Ethnopharmacology* 151: 493-502.
15. Upadhyaya V, Hegde HV, Bhat S, Hurkade PJ, Kholkute SD, Hegde GR. 2012. Ethnomedicinal plants used to treat bone fracture from North-Central Western Ghats of India. *Journal of Ethnopharmacology* 142: 557-562.
16. Patel YS, Joshi EP, Joshi PN. 2010. Ethnobotanical study of Tapkeshwari Hill, Bhuj, Kachchh, India. *Life Science Leaflets* 2: 22-31.
17. Gautam RK, Singh D, Nainwani R. 2013. Medicinal plants having anti-arthritis potential. *Int. Jr. Pharm. Sci. Rev. Research* 19(1): 96-102.
18. Bhat KG. 2003. *Flora of Udupi*. Indian Naturalists, Udupi, Karnataka, India.
19. Cooke T. 1967. *Flora of Presidency of Bombay*. Vol I-III. Botanical Survey of India, Calcutta.
20. Sivasankari B, Anandharaj N, Gunasekaran P. 2014. An ethnobotanical study of indigenous knowledge on medicinal plants used by the village peoples of Thoppampatti, Dindukal district, Tamil Nadu, India. *Journal of Ethnopharmacology* 153: 408-423.
21. Giday M, Asfaw Z, Woldu Z. 2010. Ethnomedicinal study of plants used by Sheko ethnic group of Ethiopia. *Journal of Ethnopharmacology* 132: 75-85.
22. Gonzalez JA, Garcia-Barriuso M, Amich F. 2010. Ethnobotanical study of medicinal plants traditionally used in the Arribes del Duero, Western Spain. *Journal of Ethnopharmacology* 131: 343-355.
23. Amri E, Kisangau DP. 2012. Ethnomedicinal study of plants used in villages around Kimboza forest reserve in Morogoro, Tanzania. *Journal of Ethnopharmacology* 143: 1. <http://dx.doi.org/10.1186/1746-4269-8-1>.
24. Ullah M, Khan MU, Mahmood A, Malik RN, Hussain M, Wazir SM, Daud M, Shinwari ZK. 2013. An ethnobotanical survey of indigenous medicinal plants in Wana district south Waziristan agency, Pakistan. *Journal of Ethnopharmacology* 150: 918-924.
25. Shil S, Choudhury MD, Das S. 2014. Indigenous knowledge of medicinal plants used by the Reang tribe of Tripura state of India. *Journal of Ethnopharmacology* 152: 135-141.
26. Balangcod TD, Balangcod AKD. 2011. Ethnomedicinal knowledge of plants and healthcare practices among the Kalanguya tribe in Tinoc, Ifugao, Luzon, Philippines. *Indian Journal of Traditional Knowledge* 10: 227-238.
27. Chander MP, Kartick C, Gangadhar J, Vijayachari P. 2014. Ethno medicine and healthcare practices among Nicobarese of Car Nicobar—an indigenous tribe of Andaman and Nicobar Islands. *Journal of Ethnopharmacology* 158: 18-24.
28. Sargin SA, Akcicek E, Selvi S. 2013. An ethno botanical of medicinal plants used by the local people of Alasehir (Manisa) in Turkey. *Journal of Ethnopharmacology* 150: 860-874.
29. Mahmood A, Mahmood A, Malik RR. 2012. Indigenous knowledge of medicinal plants from Leepavally, Azad Jammu and Kashmir, Pakistan. *Journal of Ethnopharmacology* 143: 338-346.
30. Abe R, Ohtani K. 2013. An ethnobotanical study of medicinal plants and traditional therapies on Batan Island, the Philippines. *Journal of Ethnopharmacology* 145: 554-565.
31. Tuttolomondo T, Licata M, Leto C, Bonsangue G, Gargano ML, Venturella G, La Bella S. 2014. Popular uses of wild plant species for medicinal purposes in the Nebrodi Regional Park (North-Eastern Sicily, Italy). *Journal of Ethnopharmacology* 157: 21-37.