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Ethnobotanical Survey of Medicinal plants in Raibag, Belagavi, Karnataka

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Abstract
Traditional herbal medicines prepared from wild plants play a very significant role in the primary healthcare. The survey was undertaken during 2019 to 2020 to document wild medicinal plants used in rural areas of Raibag taluka of Belagavi District, Karnataka. In the present survey 66 medicinal plants belonging to 58 genera and 31 families have been documented. The data has been presented schematically as serial number, aliments with their botanical name with family name, Kannada name, part used and mode of preparation.

Keywords: medicinal plants, Raibag, Belagavi, Karnataka

Introduction
Medicinal plants are highly utilized throughout the world in two distinct lines of health practices and management. They are traditional system of medicine and modern system of medicine. The traditional medicinal system is mainly functions through two distinct ways (1) Local or folk or tribal stream and, (2) Codified and organized Indian system of medicines like Ayurveda, Siddha and Unani. Since last few decades, importance and applications of traditional medicine has been expanded globally and has received attention by the peoples. It has been continuously used for primary health care of the poor and developing countries. According to World Health Organization (WHO), traditional medicine is defined as "the sum total of the knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health, as well as in the prevention, diagnosis, improvement or treatment of physical and mental illnesses" [19].
The traditional herbal medicines are comparatively safer and cheaper than modern medicine [1]. A great deal of information about the traditional uses of plants is still intact with tribal or rural peoples. But the native healers are often reluctant to accurately share their knowledge to outsiders [27]. Most of the rural people in the district use traditional medicine for various ailments with very negligible cost or sometime free of cost. There is increasing demand for wild plant resources and their habitats because of over exploitation [11]. This traditional knowledge is verbally transmitted from generation to generation, and hence in danger of extinction as older people die and younger generations fail to learn the traditional way of life. This situation is degraded by rapid socio-economic, technological and environmental changes [28]. Indigenous knowledge about uses of wild plant resources such as medicinal plants is disappearing fast from traditional or rural communities [3]. Urbanization, mining, agricultural expansion and other developmental works have also resulted in the decline of interest in traditional culture and it practices. The available literature divulges that documentation of traditional knowledge has not been carried out earlier in the study area. Hence, there is an urgent need to document and preserve all information on medicinal plants used by rural communities in the Raibag before it is completely lost or verge of extinct. Documenting the indigenous knowledge through ethno-botanical studies is important for the conservation of biological resources and their sustainable utilization.

Materials and Methods
Ethno-medicinal survey was carried out from 2019 to 2020. The information on use of medicinal plants was gathered through oral interviews with the local people specially the geriatric person. Different plants and its parts used to cure different ailments are recorded during this interview. All the gathered information was cross checked with available published literature. The plants were identified as per the local name [10, 4] and regional and state flora of Karnataka [7, 21, 22]. The specimens were deposited in the Herbarium P.G. Department of Botany, B. K. College, Chikodi, Belagavi.

Results and Discussion
A total of 66 medicinal plants belonging to 58 genera and 31 families were documented in the study area. The results gathered during the survey are summarized in the Table 1. The most represented families are Fabaceace with 6 species, followed by Anacardiaceae, Cucurbitaceae, Moraceae. Eight families are represented by 3 species each they are Apiaceae, Arecaceae, Asteraceae, Combretaceae, Lamiaceae, Malvaceae, Myrtaceae and Zingiberaceae. The families like Acanthaceae, Amaryllidaceae, Annonaceae, Apiaceae, Oleaceae, Piperaceae and Solanaceae represented with 2 species. Other families like Apocynaceae, Boraginaceae, Caricaceae, Lauraceae, Menispermaceae, Phyllanthaceae, Rhamnaceae, Rubiaceae, Rutaceae, Santalaceae, Verbenaceae and Vitaceae represented with only one species each. In similar results were found in Coochbehar district of West Bengal where Fabaceae were dominant families [8]. Medicinal plants belonging to families like, Lamiaceae were dominant in Kadapa district of Andhra Pradesh [19]. Asteraceae were the leading families in Kerala state [17], whereas in Kancheepuram district of Tamil Nadu, Amaranthaceae were dominant ones [5].

Dominance of these families is due to their adaptability to the dry climatic condition. Most of these families have a large number of trees. An analysis on the life form composition of wild or cultivated medicinal plant species of the study area reveals that majority of the plant species are trees predominate with 33 species (50%) followed by herbs 18 species (27%) and climbers 8 species (12%) and shrubs with 7 species (11%). According to the survey, part used in the preparation of medicine reveals that the contribution of leaves (41%) part used in the various treatments followed by bark (19%), seeds (15%), fruits (8%), stems (7%), pulp (7%), whole plant (2%), and flowers (1%).

According to WHO, nearly 80% of the world populations rely on traditional medicines for primary health care, most of which involve the use of plant extracts [23]. Today about 65% of Indian population depend on the traditional system of medicine [2]. In Raibag, jaundice, joint pain and stomachache were the most common diseases, for which large number of patients visit the traditional medicinal practitioners. The possible reason behind these diseases in the investigated region might be due to lack of proper sanitation, fuel wood smoke inside houses and poor quality food.

For the treatment of jaundice in Raibag taluka, *Cassia fistula*, *Conocarpus tristis lancifolius*, *Azadirachta indica*, *Tinospora cordifolia*, *Nyctanthes arbor-tristis Rhus succedanea* and *Abelmoschus manihot* found effective for treating jaundice. The species of *Phyllanthus amarus* is also used as an effective remedy for jaundice in Pakistan [12]. *Ricinus communis* is used to treat worms in the teeth and skin cracks in Nepal [14], while *Leucas aspera* is used for treating snake bite and one side headache in Tamil Nadu [20]. Traditionally, rural women in the study area prefer plant medicines rather than modern medicines for gynecological problems such as dysmenorrhoea (painful menstruation). Most commonly used medicinal plant for these problems were; the bark of *Mangifera indica*, *Ficus benghalensis*, *F. religiosa*, and *Polyalthia longifolia*. For this similar kind of problems, the species of *Caesalpinia bonduc* and *Clitoria ternatea* are also used for in Bidar district of Karnataka [30] and Madhya Pradesh [29], respectively. Savithramma *et al*., [24] reported that *C. bonduc* is used to treat rheumatic pains in Andhra Pradesh. *Withania somnifera* is used to treat rheumatism in Rajasthan [6] and tumors and ulcers in Maharashtra [15].

The most commonly used plant species for treating dysentery in the study area is *Aegle marmelos* which used for the same problem in Tamil Nadu [13], Orissa [25] and Madhya Pradesh [31]. However, *Aloe vera* is used for menstrual disorders in Himachal Pradesh [18], and for respiratory disorders in Cameroon [9]. *Senna auriculata* is used for treating dysentery in Rajasthan [16], and for skin diseases in Tamil Nadu [26]. Although some of the plants used in the study area, were also used for the same ailments in other regions, they differ in the parts used, method of drug preparation and administration.

Table 1: List of Medicinal Plant Species with their Botanical Name, Local Name, Mode of Preparation against the Aliments.

Sl. No.	Aliments	Botanical name with local name, parts used and mode of preparation
1	Abdominal pain	5 gram of black salt along with 5 gram of cumin seeds (*Cuminum cyminum* L.), piper seeds (*Piper longum* L.), dry zinger (*Zingiber officinale* Roscoe), hingu seeds (*Ferula assa-foetida* L.), garlic (*Allium sativum* L.) each. All seeds are grind into homogenize paste and prepare small tablets, should take around 21 days to get cure from abdominal pain.
2	Acidity	20 to 40 gram dry zinger (*Zingiber officinale* Roscoe), dry dates (Phoenix sylvestris (L.) Roxb.), curcuma (*Curcuma longa* L.), *Terminalia catapa* L. (badam), *Anacardium occidentale* L. (godambi), dry grapes (*Vitis vinifera* L.), pulp of gorakhachinch (*Adansonia digitata* L.) grind well in to fine powder and prepare tablets, take two times in a day for 21 days.
3	Blood purifier	10 gram of *Santalum album* L. bark and boiled it for 20 minutes. Take 3 spoon of this decoction twice in a day for 14 days.
4	Constipation	Fruits of *Cassia fistula* L. (Kaki mara), *Embilica officinalis* Gaertn. (Nelli) and *Terminalia bellirica* (Gaertn.) Roxb. (Tare mara), grind into fine powder. Take one spoon daily with warm water.
5	Cough of children	Prepare a juice (around 5 to 10 ml) of zinger, ocimum and adathoda (*Justicia adathoda* L.) mix it well and collect 1 spoon from the mixture, add 1 spoon honey and fruit pulp golli kayi (*Acacia farnesiana* (L.) Willd.), take it twice in a day for three days.
6	Diabetes	Take the fresh one or two leaves of *Aegle marmelos* (L.) Corr. (Patri) daily morning it will reduce sugar level in blood.
7	Dizziness	Prepare the fine powder of *Hygrophila schulii* (Ham.) M.R. and S.M. Almeida (Talimkhana) (10 gram), *Terminalia catapa* L. (badam), *Anacardium occidentale* L. (godambi), dry dates (*Phoenix sylvestris* (L.) Roxb.), dry coconut (*Cocous nucifera* L.), cardamom (*Elettaria cardamomum* (L.) Maton), black ocimum leaves (*Ocimum basilicum* L.) and pulp of sitaphala (bahubijaka) (*Annona squamosa* L.). Take 2 spoon of above powder and add 2 spoon honey. Take it with 1 glass of milk, twice in a day for a month.
8	Dry cough	Prepare the fruit juice of adathoda (*Justicia adathoda* L.) mix with neem juice, 1 spoon honey and little amount of sugar powder. Take 1 spoon in two times in a day for 3 days. Take an *Ocimum tenuiflorum* L. leaf (5-6) and zinger (*Zingiber officinale* Roscoe) grind them thoroughly and filter the juice and take it in a twice in a day, it will cure cough within a week.
9	Dysentery	The fruit of *Aegle marmelos* (L.) Corr. (Patri) burned it and collects inner pulp and grinds it with sugar and prepare decoction, take it with 1 glass of water.
10	Dysmenorrhea	Take the equal amount of bark of *Mangifera indica* L., *Ficus benghalensis* L., *F. religiosa* L., *Polyalthia longifolia* (Sonnerat). Thw, boiled and prepare the decoction. Take 4 spoons with water for 21 days.
11	Earache	Collect the dry seeds of *Solanum virginianum* L. and prepare decoction and put it into ears. Take a white Onion (*Allium cepa* L.) or Savatikayi (*Cucumis sativus* L.) crush it and take a filtrate, one or two drop put it into ears to reduce ear pain.
12	Eczema	50 gram of curcuma (*Curcuma longa* L.), 40 gram of camphor (*Cinnamomum camphora* (L.) Persl.) and boil it in 1 year old cow butter and extract the filter. This filter is grind with carrot root (*Daucus carota* subsp. *sativus* (Hoffm.) Schübl. & G. Martens) apply over the infected eczema portion on the body for 21 days.

13	Eyeache	Collect two to three fresh leaves of *Coccinia grandis* (L.) Voigt, grind into juice. This prepared juice has to take twice in a day continuously for 7 days, it will cure the eye ache problem
14	Fever	The leaves of *Azadirachta indica* A. Juss., *Tinospora cordifoli* (Willd.) Miers. Ex Hooks.f. & Thoms, *Nyctanthes arbor-tristis* L., *Justicia adathoda* L., and *Conocarpus lancifolius* Engl, should boil in 1 liter of water for 30 min and then filter it. Take 1 spoon twice in a day for 3 days. Take four to five cumin seeds (*Cuminum cyminum* L.) crush it thoroughly along with a cup of hot water take a twice time in a day it will cure the fever. Take one or two leaf of *Gardenia resinifera* Roth, crush it and mix it in a sugar and eat twice in a day.
15	Hair fall	50 grams seeds of Keru (*Semecarpus anacardium* L.f.) and boiled it, filter the oil. This oil is again mix with powder of dry mulberry fruit (approx. 10 gram) (*Morus alba* L.) and add lime powder into it and prepare paste apply over the hairs to get cure from hair fall. This prepared paste is used only twice in a week.
16	Jaundice	Leaves of *Cassia fistula* L., *Conocarpus lancifolius* Engl, *Azadirachta indica* A. Juss., *Tinospora cordifolia* (Willd.) Miers. Ex Hooks.f. & Thoms. *Nyctanthes arbor- tristis* L. grind well and prepare 20 gm of juice. Add 10 gram of *Rhus succedanea* L. (Karkshingi) leaves powder in to above juice mixture and boil it in 4 liter of water. Filter the decoction and take ½ of cup twice in a day for 7 days. Take a Kadubende (*Abelmoschus manihot* (L.) Medik.) Leaf crush it thoroughly and add few betle leaf filter the juice. Take the one spoon filtrate early morning once in a week; take it for almost month continuously to get rid of jaundice.
17	Joint Pain	The leaves of *Azadirachta indica* A. Juss. (Bevu), *Calotropis gigantea* (L.) R. Br. (Yakki), *Tagetes erecta* L., (Zandu), *Eucalyptus globulus* Labill. (Nilgiri gida), *Acacia* DC. (*Ferruginea* Banni), *Tamarindus indica* L. (Hunase mara), *Datura arborea* L., (Maduginake), *Jasminum roxburghianum* Wall. Ex Cl. (Mallige huvu), *Tinospora cordifolia* (Willd.) Miers. Ex Hooks.f. & Thoms. (Amrutballi), *Nyctanthes arbor-tristis* L. (Parijat gida), *Embilica officinalis* Gaertn. (Nelli) and *Ocimum sanctum* L. (Tulasi), approximately 5 to 10 gram each is mixed in 4 liter of Gomutra (Cow urine) and prepare the decoction. The decoction should boil with sunflower oil for 2 hours. Cool it and filter the oil. This oil is applied on the joint pain and the remaining residue is used to apply on ringworm, burned area and old injuries.
18	Kidneyache problems	Take two to three fresh leaves of *Cordia sinensis* Lam. crush it thoroughly mix with one spoon honey take a once in a day for a week to reduce kidney problem.
19	Leukopenia	Eat 4-5 papaya (*Carica papaya* L.) leaf along with sugarcane juice as a vegetable for a week; it will help to increase the white blood cells in a body.
20	Nail infection	Grind the seeds of piper seeds (*Piper longum* L.) and mix it with butter milk and prepare the paste, apply on the infected nails of our body.
21	Old wounds	50 gram of barks of *Azadirachta indica* A. Juss., *Tamarindus indica* L., *Mangifera indica* L., *Acacia farnesiana* (L.) Willd.), *Syzygium jambos* (L.) Alston, *Ficus benghalensis* L. (Alada mara), *F. racemosa* L. (Atthi mara) and *F. religiosa* L., *Santalum ablum* L. (Srignadha) and *Ziziphus mauritiana* Lam. (Bare hannu) and mix 50 gram of Catechu (*Senegalia catechu* (L.f.) P.J.H. Hurter & Mabb.), prepare into fine powder mix with water and the paste is apply over the old wounds for around 15 days.
22	Paronychia	Take a Kyar leaf (*Semecarpus anacardium* L.f.) oil and apply over the infected finger it will cure finger wound problem within a 7 days.
23	Piles	Grind the leaves of *Momordica charantia* L. (Hagalkayi), add some cumin seeds (*Cuminum cyminum* L.) and cardamom seeds (*Elettaria cardamomum* (L.) Maton). Add the sugar powder in it and take 1 spoon of powder with 1 glass of milk for 21 days
24	Scorpion bite	Latex of *Calotropis gigantea* (L.) R. Br. (Yakki gida) and directly applied over the bite portion. Take a leaves of *Ocimum tenuiflorum* L. crush it and mix with a pinch of salt, boil and take orally twice in a day for two days
25	Stomachache	1 kg seeds of gajaga (*Caesalpinia bunduc* (L.) Roxb.) fry it and collect pulp of seed and grind it into fine powder along with 10 to 20 gram of dry zinger (*Zingiber officinale* Roscoe), clove (*Syzygium aromaticum* (L.) Merrill & Perry), piper seeds (*Piper longum* L.), Ajwain (*Trachyspermum ammi* Sprague), cumin seeds (Cum*inum cyminum* L.), cardamom (*Elettaria cardamomum* (L.) Maton), coriander seeds (*Coriandrum sativum* L.), ocimum leaves (*Ocimum sanctum* L.) and damas leaves (*Conocarpus lancifolius* Engl.). One spoon powder is taken along with 1 glass of hot water, twice in a day to get relief from stomachache. Take the bark of *Lantana camara* L. plant mix it with areca powder (*Areca catechu* L.) and add some part of betle leaf (*Piper betle* L.) crush it all thoroughly and take this once in a day it will cure the stomach problem
26	Toothache	Collect latex of *Calotropis gigantea* (L.) R. Br. (Yakki gida) and applied over the place of pain. Prepare the paste of Hirekayi leaves (Luffa acutangula (L.) Roxb.) and directly apply over the place of pain. It will reduce the pain.

Conclusion

In the present survey, 66 medicinal plant species used for the treatment of various disease of human beings. The diseases like Jaundice, stomachache, dysentery, indigestion, piles and menstrual problem found in human beings was well reported and documented. The reported plant species include both wild and cultivated ones. The rural people of Raibag area are highly dependent on the traditional herbal medicine. Because of their poor socio-economic conditions and availability of effective drugs plants. The data collected is expedited to serve as useful tool for the establishment of herbal drug industries and improve the economy of the region. There is still enormous traditional knowledge hidden among the medicinal plant practitioners in the district which requires some other strategies to disclose.

It is found that ethno-medicinal knowledge is becoming restricted only to the elders, traditional practitioners and local farmers, while young people are totally ignorant of this wealth. Advancement in science and technology has changed the social values and therefore, younger generation are transforming at a much faster rate into the new tradition. Medicinal plants knowledge is going to be obsolete because of the interference of modern cultural changes. This situation appears to occur in many parts of the country and

world. It is therefore very important to document the native flora along with their ethno-medicinal recipes before extinction of the indigenous knowledge.

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