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Assessment of traditional medicine knowledge in Balehonnur, Chikkamagalur district of Karnataka, India

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ABSTRACT

The medicinal plants are of great importance for the human welfare since ancient time. Several communities have been using a variety of natural plants, their parts and microbial species for curing different health ailments by their traditional knowledge. Usually the traditional knowledge about the medicinal values of different species is passed from one generation to next generation either through oral communication or by limited practicing. This knowledge should be documented properly for the advance research in the medicinal field as well as for the welfare of global population health. Many of studies have already been carried out at global scale for the documentation of medicinal plants, but the traditional knowledge documentation is very limited. Keeping this point in focus, we conducted the study in Balehonnur taluk of Chikkamagalur district, Karnataka, India, during the year 2018. The indigenous knowledge of local traditional healers was collected by survey methods viz; questionnaire survey, personal interview, personal contacts etc. Traditional healers resided in study area are well known experts in curing many ailments. In the present study, the medicinal plants along with their parts and mode of application were documented.A total of 34 plant species were recorded with their medicinal values and these species are distributed among 22 families of taxonomy. The plants were identified as tree (14), shrubs (5), herbs (12), climbers (2) and epiphyte (1). The most frequent use of leaves followed by roots, fruits, bark, stem, seeds, leaf bud, watery latex, Milky latex, flowers and entire plant for the treatment of various ailments like Amoebiasis, Menstrual cramps, Menorrhagia, White discharge, Dysentery, Leukopenia, Eye ailments, Dog bite, Hair fall, Cough, Vomiting, Piles, Jaundice, Fever, Poisonous bite, Sore throat, Ringworm, Joint pain, wounds, burns etc. Medicines were either prepared from dry or freshly collected plant parts, with the traditional solvents of water, pure honey, lemon juice, coconut oil, cow urine etc. Many people in the study area still continue to depend traditionally on medicinal plants for primary health care. In order to sustain the practice of traditional medicine it is necessary to conserve the plants, their natural habitat and traditional knowledge, not only for the medical science, but also to promote biodiversity.

Key words : *Medicinal plant, Traditional medicine knowledge, Tree, Herb, Shrub, Climber, Epiphyte, Balehonnur, Chikkamagalur*

Introduction

In several parts of the world, especially developing and undeveloped countries the human health is compromising due to rapid population growth, urbanisation, industrialization and climatic alterations (Singh *et al.*, 2018; Singh and Jayakumar, 2017; Singh and Jayakumar, 2015). The cumulative impact of all these play significant role in alteration of local weather conditions, which ultimately im-

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pacts the prevailing natural resources and the population dependent on those. As of now, the whole world is concerned about the increasing temperature of the globe, which may lead to many consequences including decline in biodiversity and the outburst of a variety of diseases. For treatment and cure of these, the medicines and drugs are used, which use to be extracted from a wide range of natural vegetation. The vegetation with medicinal values and which are used for curing ailments is popularly known as medicinal plants (Pratap *et al.,* 2017; Lim, 2012; Hassan, 2012). These are of great importance since ancient time for the maintenance of good health. A variety of medicinal plants and their derivatives were being used for curing of different ailments, and some them were documented also, during the periods of 4500BC to 1600BC (Prasad and Kumar, 2013). A variety of efforts was made to document different medicinal plants since ancient time and is still on, all around the globe through research activities.

Many of the natural plant species of medicinal values were reported deep inside the forests and/or in remote areas which are not easily accessible for the researchers who are not familiar about the existing terrain. In these cases, the local human population play the crucial role in process of identification of medicinal plants and their uses, as many of them have been using the same on their traditional knowledge (Kumar and Theerthavathy, 2012). In India, 3000 - 3500 medicinal plant species has already been documented, and out of them more than 100 species are recognised as regular source of medicines for different ailments (Kumar and Siddamallayya, 2016). As per the record of Botanical Survey of India, a total of 3924 plant species, belonging to 1323 genera, and 199 families are documented in Karnataka. Out of that 1493 species, belonging to 808 genera and 108 families are identified as medicinal plants (Santhosh *et al.,* 2014). In some other recent researches, the medicinal plants were documented in different parts of India (Patil and Yadav, 2003; Hiremath *et al.,* 2010; Kaur *et al.,* 2011; Sharan, 2011; Alagesaboopathi, 2012; Hassan, 2012; Lim, 2012; Lingaiah and Nagaraja, 2013; Sadale and Karadge, 2013; Chandra, 2014; Singh and Jayakumar, 2015). Many of the medicinal plants and their derivatives were being used for curing a variety of ailments by different communities and local medical practitioners on basis of their tradition knowledge which were passed-on from their predecessors and their own experiences. The traditional knowledge about the medicinal plants and their benefits are restricted with a variety of communities, and these have not yet been explored by scientific community in different remotely localised areas (Nandini and Siddammallayya, 2013). The scientific documentation of this traditional knowledge will be helpful not only in biodiversity analysis, rather it will be having crucial implications in advancement of medicinal research (Kaur *et al.,* 2011; Sathya and Jayakumar, 2016; Sathya and Jayakumar, 2017). One of the challenges in this process is sometimes local practitioners and communities hesitate to disclose their traditional knowledge to outside world due to some beliefs, myths and misconceptions, which should be resolved by convincing them about their role in broader aspects. Their knowledge can directly help Ayurvedic and pharmaceutical industries which are involved in natural and synthetic drugs preparation respectively. These industries can provide the assistance to the communities and acquire the knowledge which are cost effective and with minimum side effects (Al-Adhroey *et al.,* 2010; Hiremath *et al.,* 2010).

There are many studies available about the plant biodiversity analysis in southern India, especially over Western and Eastern Ghats of India including Karnataka state of India. But a limited number of literatures are available regarding the values of medicinal plants (Meera, 1998; Yoganarasimhan, 2003; Manjunatha *et al.,* 2004; Hiremath *et al.,* 2010; Prakasha *et al.,* 2010; Kumar and Theerthavathy, 2012; Nandini and Shiddamallaya, 2013; Prasad and Kumar, 2013; Santhosh *et al.,* 2014; Raveesha and Sudhama, 2015; Kumar and Shiddamallaya, 2016). In these studies medicinal plant species were documented, but few of them have covered their modes of uses and traditional knowledge. Keeping these points in note, we have conducted this study with the objectives of documenting the medicinal plants, their parts and derivate being used, mode of application and allied tradition knowledge.

Materials and Methods

Study area

The study site named Balehonnur (Figure. 1) is situated across the geographical co-ordinates (13°19′59"N to 13°22′26" N latitude and 75°25′54"E - 75°27′54.21"E longitude), and 50.0 km away from

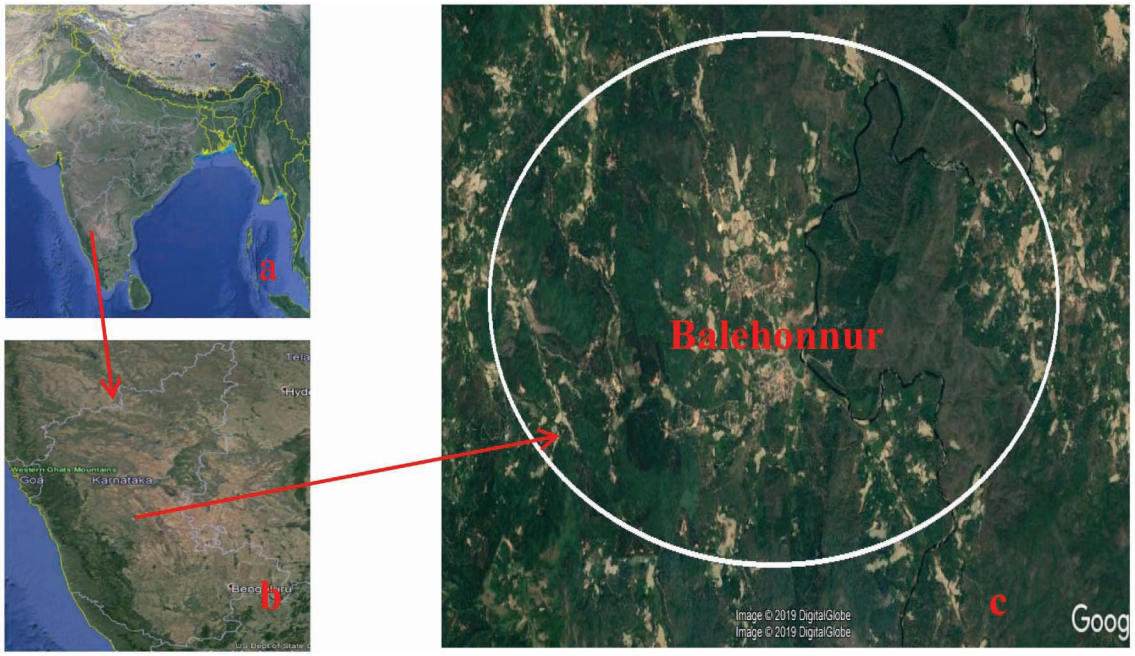

Fig 1. Map of India (a), Karnataka (b) and Study area (c)

the Chikkamagalur, township, Karnataka. The terrain is undulatinng with an average elevation of 714m. Temperature varies with 17ˆC to 27ˆC, average humidity of 60- 80%, and the rainfall ranges from 180-250 cms (Raveesha and Sudhama, 2015). The local language is Tulu and the people indulge themselves in agriculture and plantation of Areca nut, Coffee, Pepper, cardamom and Banana.

Sampling and Data collection

The frequent field works were conducted in the study area, among all the hamlets and data were generated through survey methods during year 2018. The information regarding the medicinal plants was collected by using questionnaire survey and interviewing the traditional medical practitioners, different age group populations who have been acquainted with traditional knowledge. The surveyed population were categorised in three groups on basis of age, named as elderly group (above 40 years), middle age group (20-40 years) and young age groups (below 20 years). The standard questionnaire was prepared to collect the information, including the habit and habitat of medicinal plants, names (local and scientific), and parts being used, the processing before use, mode of use and kind of ailments being treated.

Further, the medicinal plant samples as well as the photographs of same were collected for the identification.

Results and Discussion

In this study, a total of 34medicinal plant species, belonging to 33 genera and 22 families were identified and documented across the study area (Table 1). The family wise distribution of these has revealed that the maximum number of medicinal plant species is of Leguminosae family (Figure 2).

The habits of the recorded plants were identified as epiphyte (1), climbers (2), herbs (12), shrubs (5), and trees (14) and their percentage distribution is shown in Figure 3. This study recorded highest number of trees and least number of epiphytes with medicinal values, which is in compliance with the

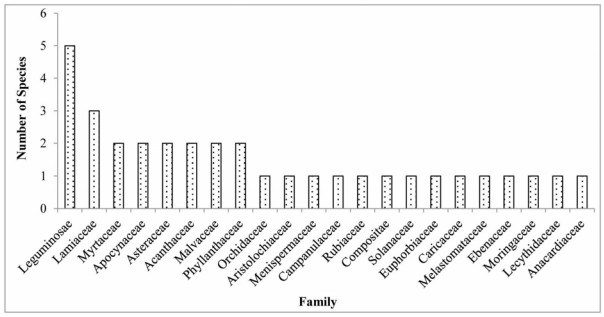

Fig 2. Family-wise distribution of medicinal plants

Table 1. List of medicinal plants and their details in the Balehonnur study site

S. No.	Botanical Name	Family	Common Name	Local Name	Habit	Parts used	Aliments treated	Mode of usage
1	*Rhynchostylisretusa* (L.) *Blume*	Orchidaceae	Cat-tailedorchid	Sitadande	Epiphyte	Stem	Ear pain	Juice of dried tender stem put into the ears
2	*Aristolochiaindica* L.	Aristolochiaceae	Indian birthwort	Eeshwaraberu	Climber	Root	Poisonous bite	Crushed roots with lemon applied externally
3	*Tinosporacordifolia (Willd.) Miers*	Menispermaceae	IndianTinospora	Amrutaballi	Climber	Leaves	Stomach ache	Leaves juice with jeera taken orally.
4	*PhyllanthusamarusSchumach. &Thonn.*	Phyllanthaceae	Phyllanthus	Nelanelli	Herb	Whole plant	Jaundice	Decoction of plant with jeera and menthi taken orally. Fruits are edible.
5	*Lobelia nicotianifolia* Roth ex Schult.	Campanulaceae	Wildtobacco	Eggumbe	Herb	Root	Sore throat	Root juice with lemonjuice applied externally.
6	*Ixoracoccinea L.*	Rubiaceae	Jungle flame	Kepula	Herb	Root & Fruits	Stomach ache	Decoction of roots with jeera taken orally. Fruits are edible.
7	*Eclipta alba (L.) Hassk.*	Compositae	False daisy	Garaga	Herb	Leaves	Hair fall	Leaves juice with same quantity of Coconut oil applied on hairs.
8	*Centratherumanthelminticum* (L.)	Asteraceae	Bitter cumin	Kaalujeerige	Herb	Seed	Ringworm	Seeds are heated in Coconut oil, applied externally.
9	*Mimosa pudica L.*	Leguminosae	Touch MeNot	Nachikemullu	Herb	Leaves	Joint pain	Leaves paste applied externally.
10	*Andrographispaniculata* (Burm.f.) Nees	Acanthaceae	Greenchirayta	Nelabevu	Herb	Stem	Body itching	Decoction of stem with jeera taken orally.
11	*Emilia sonchifolia* (L.)DC. ex Wight	Asteraceae	Purple sowthistle	Elikivisoppu	Herb	Leaves	Eye pain	Leaves juice applied on eyes dropwise.
12	*Solanum nigrum L.*	Solanaceae	Black nightshade	Kaki	Herb	Leaves & Fruit	Stomach ache	Leaves are consumed by cooking. Fruits are edible.
13	*Ocimum basilicum* L.	Lamiaceae	Common basil	Kama kasturi	Herb	Seed	Wet cough	Soaked seeds in water consumed with milk and sugar.
14	*Coleusa romaticus* Benth.	Lamiaceae	Indianborage	Sambaruballi	Herb	Leaves	Children's Cold	Decoction of leaves with honey taken orally.
15	*Cassia tora L.*	Leguminosae	Pot cassia	Chigathe	Herb	Leaves	Stroke	Leaves consumed by cooking.
16	*Justicia adhatoda L.*	Acanthaceae	Adhatoda	Aadusoge	Shrub	Root	White discharge	Crushed roots with Honey taken on an empty stomach.
17	*Sidarhom bifolia L.*	Malvaceae	Angled sida	Kadlanggada le	Shrub	Root	Body pain	Decoction of roots with jeera, pepper and jaggary taken orally.
18	*Hibiscus rosa-sinensis* L.	Malvaceae	Shoe flower	Belidasavala	Shrub	Flower & Leaves	White discharge	Paste of flowers and leaves mixed in dosa batter and consumed.

Table 1. *Continued ...*

S. No.	Botanical Name	Family	Common Name	Local Name	Habit	Parts used	Aliments treated	Mode of usage
19	*Ricinus communis L.*	Euphorbiaceae	Castor	Haraluberu	Shrub	Root	Body pain	Decoction of roots with jeera, pepper and jaggary taken orally.
20	*Calotropis procera*	Apocynaceae	Milkweed	Beliyekke	Shrub	Leaves	Joint pain	Heated leaf presseda gainst joints.
21	*Pterocarpusmarsupium* Roxb.	Leguminosae	Malbarkino	Honne	Tree	Bark	Amoebiasis	Crushed bark with jeeraand milk taken orally.
22	*Carica papaya L.*	Caricaceae	Papaya	Parangi	Tree	Leaves & Fruit	Leukopenia	Leaves juice taken orally. Fruits are edible.
23	*Phyllanthus emblica* L.	Phyllanthaceae	Indian gooseberry	Bettadanelli	Tree	Leaves & Fruit	Wounds	Dried leaves powder applied externally. Fruits are edible.
24	*Memecylon malabaricum Cogn.*	Melastomataceae	Doddanekkare	Ollekudi	Tree	Leaves	Menstrual cramps	Leaves juice with jeera taken orally.
25	*Syzygiumcumini L.*	Myrtaceae	Jamun	Nerale	Tree	Bark &Fruit	Dysentery	Decoction of Crushed bark with jeera taken orally. Fruits are edible.
26	*Tectona grandis L. f.*	Lamiaceae	Teak	Saguvane	Tree	Leaves	Burns	Crushed leaves with jeera, boiled in coconut oil and applied externally.
27	*Tabernaemontana heyneana Wall.*	Apocynaceae	Madlemara	Kokkekayi	Tree	Bark	Cough	Decoction of bark withjeera taken orally.
28	*Caesalpiniamimosoides* Lam.	Leguminosae	Mimosa thorn	Chimullu	Tree	Leaves	Pimples	Leaves paste with turmeric powder appliedon the face.
29	*Diospyros montana* Roxb.	Ebenaceae	Mottledebony	Jagalagantti	Tree	Waterylatex	Wounds	Watery latex applied externally.
30	*Psidium guajava L.*	Myrtaceae	Guava	Perale	Tree	Leaf bud& Fruits	Tooth ache	Gargling of decoction. Fruits are edible.
31	*Moringa oleifera Lam.*	Moringaceae	Drumstick	Nugge	Tree	Bark	Dog bite	Crush the bark with lemon juice and apply immediately after dogbite.
32	*Careyaar borea* Roxb.	Lecythidaceae	Patana oak	Kavalu	Tree	Bark	Menstrual cramps and Menorrhagia	Crush the bark with raw milk and taken orally for 3 days.
33	*Pongamia pinnata* (L.)	Leguminosae	Karanj	Honge	Tree	Leaves	Itching	Leaves paste with turmeric applied externally.
34	*Anacardiumoccidentale* L.	Anacardiaceae	Cashew	Geru	Tree	Leaf bud, Fruit & Nuts	Amoebiasis and Dysentery	Leaves juice with buttermilk taken orally. Fruits are edible

other researches of similar kind conducted by Mongalo and Makhafola, 2018.

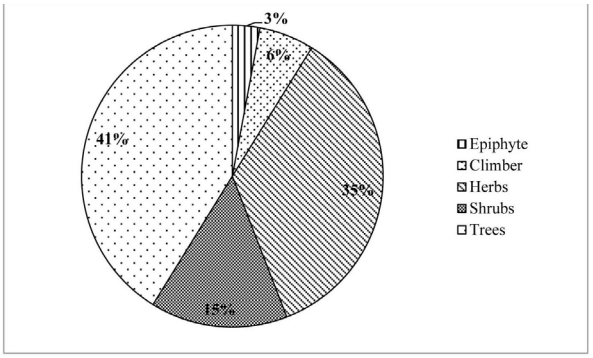

Fig 3. Habit-wise distribution of medicinal plants

Different parts of plants were used for medicinal purposes. The leaves are being used predominantly followed by fruits, roots, bark, leaf buds, seeds, stems, latex, flowers and nuts (Figure 4). All these are used in the study site for the treatment and cure of different ailments including stomach ache, hair fall, joint pain, eye pain, Children's Cold, Stroke, white discharge, leukaemia, wounds, menstrual cramps, pimples, burns and itching. The roots of Drumstick (*Moringa oleifera Lam*) and wild tobacco (*Lobelia nicotianifolia Roth ex Schult.*) plants are specifically used against poisonous bite and sore throat ailments respectively.The similar kind of studies in other parts of India has also reported that the leaves of medicinal plants are most frequently used for medicinal purposes (Alagesaboopathi, 2012; Sadale and Karadge, 2013).

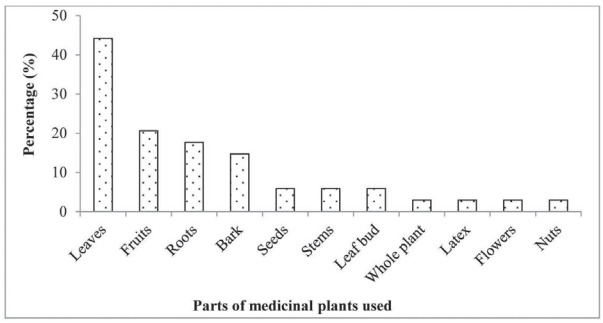

Fig 4. Percentage use of plant parts for medicinal purpose

For treatment and cure of various ailments, the recorded plant species were being used since long time and now days also on, with the help of traditional knowledge and acquainted experience of traditional medical practitioners in the study area. Total 17 ailments which are very common were identified and the numbers of species used for their treatment and cure is depicted in Figure 5. The maximum number of species is identified for the skin ailments.

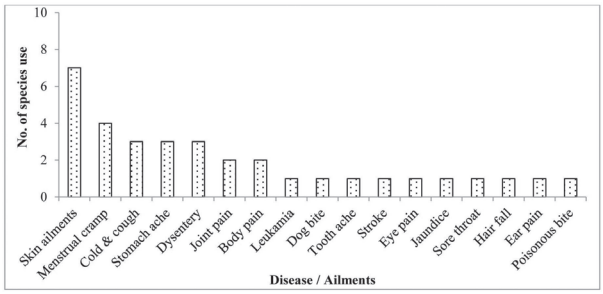

Fig. 5. Number of species used for treatment of various ailments

The medicinal plants and/or their parts are consumed either directly in some cases or after the processing. For processing, the commonly used solvents are coconut oil, milk, lemon juice, pure honey, cow urine and butter milk. The percentage contribution of these solvents for medicine preparation is shown in Figure 6.

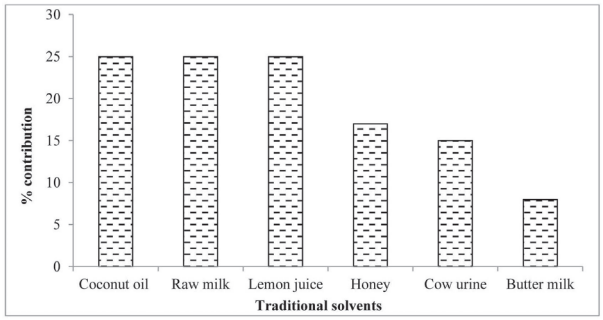

Fig. 6. Percentage contribution of solvents in medicine processing

The prepared medicines are directly used to the external wounds or skin ailmentsas well as consumed orally for internal ailments. In addition, the fruits of some medicinal plants'such as *Phyllanthus amarus Schumach. & Thonn., Ixora coccinea L., Solanum nigrum L., Carica papaya L., Phyllanthus emblica L., Syzygium cumini L., Psidium guajava L. and Anacardium occidentale L.* are directly consumed to meet the nutritional requirement of body.

This study also revealed that elderly age group population (75%) are more enriched with the traditional knowledge of medicinal plants, followed by middle age population (53%), whereas the younger

age group population (26%) is least aware.

Conclusion

This study was aimed to document the medicinal plants, related information and traditional knowledge. It is concluded with a total number of 34 medicinal plant species, being used either as the whole plant and/or their derives, for the treatment and cure of 17 different ailments across the study site. This study also concludes that, a large number of the elderly population especially traditional medical practitioners, along with fewer middle aged population are well enriched about the knowledge of medicinal plants and their processing to medicines and consumption mode, whereas the younger generation population are lacking in the same. This study outcome can be helpful in conducting further research and creating awareness among the younger population of the area about conservation, preservation and effective management of the medicinal plants.

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References

Amuka, O., Tarus, P. K., Machocho, A. K. and Ruttoh, E. K. 2015. Plant extracts as solutions to multidrug resistant, *Indigofera homblei* Bak.f and Martin, Fabaceae, a plant used in Kenya against microbial related conditions. *Advanced Techniques in Biology and Medicine*. 3(3) : 1-5.

Alagesaboopathi, C. 2012. Ethnobotanical Survey of Medicinal Plants used by MalayaliTribals and Rural People in Salem District of Tamilnadu. India. *Journal of Pharmacy Research.* 5(12): 5248-5252.

Al-Adhroey, A. H., Nor, Z. M., Al-Mekhlafi, H. M. and Mohamed, R. 2010. Ethnobotanical study on some Malaysian anti-malarial plants: A community based survey. *Journal of Ethnopharmacology*. 132 : 362-364.

Chandra, P. 2014. Medicinal Herbs and plants of India. *Swastik publications New Delhi*. 1 : 2- 3.

Hassan, R. 2012. Medicinal Plants (Importance and uses). *Pharmaceutica AnalyActa*. 3 (10): 100-139.

Hiremath, V. T. Vijaykumar, M. M. and Taranath, T. C. 2010. Survey on Ethno medicinal Plants of Jogimatti Forest Chitradurga District, Karnataka, India. *Environment and We. An International Journal of Science Technology*. 5 : 223-233.

India Biodiversity Portal. https://indiabiodiversity.org. on 26/11/2018.

Kaur, I. Shalini, S. and Sukhbir Lal. 2011. Ethnobotanical survey of medicinal plants used for different diseases in Mandi district of Himachal Pradesh. *International Journal of Research in Pharmacy and Chemistry.* 1(4) : 1167-1171.

Kumar, P. and Shiddamallayya, N. 2016.Survey of wild medicinal plants of Hassan district, Karnataka. *Journal of Medicinal Plants Studies.* 4 (1) : 91-102.

Kumar, R. and Theerthavathy, B. S. 2012. Ehano-Botanical survey of medicinal plants in semi malnad area of Hassan district, Karnataka. *Journal of Pharmacognosy*. 3(2): 75- 78.

Lim, T. K. 2012. Edible Medicinal and Non-Medicinal Plants. *Springer Dordrecht Heidelberg London New York.* 1 : 2-3.

Lingaiah, M. and Nagaraja Roa, P. 2013.An ethnobotanical survey of medicinal plants used by traditional healers of Adilabad district, Andhra Pradesh. *Biolife An International Quarterly Journal of Biology and Life Sciences.* 1(1): 17-23.

Manjunatha, B. K., Krishna, V. and Puttaiah, T. 2004. Flora of Davanagere district Karnataka, India. *Regency Publications.* 2:4-8.

Meera, B. K. 1998. Bharateeya Vaidya Vidya Pitamaha Susrutha, *(Karnataka Pustaka Pradhikara, Bangalore)*, 272.

Mongalo, N. I. and Makhafola, T. J. 2018. Ethnobotanical knowledge of the lay people of blouberg area (pedi tribe), Limpopo province, South Africa. *Journal of Ethnobiology and Ethnomedicine.* 14 (46) : 1-23.

Nandini, N. and Shiddamallayya, N. 2013. Diversity of medicinal plants flora of old Mysore District, Karnataka, India. *Indo American Journal of Pharmaceutical Research*. 3(8) : 6248- 6258.

Patil, S. H. and Yadav, S. S. 2003.Traditional medicinal plants of Satpuda, Nandurbar District, Maharastra state. *The Indian Forester*. 129 (5) : 1379-1387.

Prakasha, H. M., Krishnappa, M., Krishnamurthy, Y. L. and Poornima, S. V. 2010. Folk medicine of N R Pura taluk in Chikmagalur district of Karnataka. *Indian Journal of Traditional Knowledge*. 9 (1) : 55-60.

Prasad, D. and Kumar, K. 2013. Ethno-botanical potential of medicinal legumes in the Western Ghats of Karnataka. *Indo American Journal of Pharma Research.* 3(1) : 1300-1307.

Pratap, G. K. Ashwini, S. and Manjula Shantaram. 2017. Practice of traditional medicinal plants in humans and cattle in Arasikerehobli of Karnataka. *Journal of Medicinal Plants Studies.* 5 (3) : 38-41.

Raveesha, H. R. Sudhama, V. N. 2015. Ethnoveterinary Practices in Mallenahalli of Chikmagalur Taluk, Karnataka. *Journal of Medicinal Plants Studies*. 3(1): 37-41.

Sadale, A. N. and Karadge, B. A. 2013. Survey on Ethno-Medicinal Plants of AjaraTahsil, District Kolhapur, Maharastra (India). *Trends in Life Sciences*. 2(1): 21-25.

Santhosh, N. R. Yogesh Kumar, R. G. and Krishnaswamy, K. 2014. Ethno medicinal plants used by traditional herbal practitioners of KadurTaluk of Chikmagalore district of Karnataka, India. *Journal of Medicinal Plants Studies*. 2(4) : 69-72.

Sathya, M. and Jayakumar, S. 2016. A contemporary assessment of tree species in Sathyamangalam Tiger Reserve, Southern India. *Proceedings of the International Academy of Ecology and Environmental Sciences*. 7(2) : 30-46.

Sathya, M. and Jayakumar, S. 2017.Post-fire regeneration status of tree species in a tropical dry deciduous forest of southern India. *Journal of Tropical Forest Science.* 29(3): 305–317.

Singh, A. K. and Jayakumar, S. 2015. A review on methods to estimate CH4 and N2O fluxes in terrestrial ecosystem. *Climate Change and Environmental Sustainability*. 3(2): 104- 113.

Singh, A. K. and Jayakumar, S. 2017. Heavy metal contamination in sediments of Kanwarjheel wildlife sanctuary, Bihar, India. *Pollution Research.* 36(1): 48-58.

Singh, A. K. Sathyya, M. and Jayakumar, S. 2018. Health risk assessment of heavy metals in crop grains on open soils of Kanwar wetland, India. E*uro-Mediterranean Journal for Environmental Integration*. 3(29) : 1-7.

Sharan, S. 2011. Medicinal plants. *Pacific Books International.* 1 : 7-8.

Yoganarasimhan, S. N. 2003. *Flora of Chikmagalur District, Karnataka India.* International Book Distributors. 2 : 23-27.

The Plant List, A working list of all plant species. http://www.theplantlist.org. on 26/11/2018.