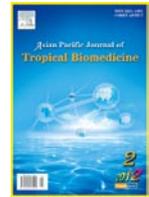


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Ethnoveterinary uses of medicinal plants among the Lambani community in Chitradurga district, Karnataka, India

Ramachandra Naik M.^{1*}, Vaishnavi Venugopalan², Preethi Kumaravelayutham² and Y.L. Krishnamurthy¹

¹ Department of P.G. Studies and Research in Applied Botany, Kuvempu University, Jnana Sahyadri, Shankaraghatta – 577451, Karnataka

² Nitya Genome Technologies Pvt. Ltd., #2/4, 3rd floor, Vishnupriya Complex, Palace Guttahalli, Bangalore– 560003

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ABSTRACT

Objective: To explore and document ethnomedicinal knowledge of various plants used by the Lambani ethnic group in Chitradurga District of Karnataka, Southern India for traditional veterinary purposes. The area is rich in plant wealth; therefore this study has been made to prepare an inventory of indigenous medicinal plants and to bring traditional knowledge on record. **Methods:** In accordance to standardized WHO questionnaires, one hundred fourteen informants – consisting of healers, practitioners, farmers and village headman – were interviewed regarding the medicinal use of the local flora in various tribal villages of Chitradurga District, Karnataka during February 2010 to October 2010. **Results:** Ethno botanical uses of 39 plants belonging to 24 families have been documented in the present study for their interesting therapeutic properties for various veterinary ailments such as lack of appetites, bloat, fever, ephemeral fever, diarrhea, cough, foot and mouth disease etc. Of the plants studied, most were trees and leaves contributed mainly to the plant part used for medical purpose. **Conclusions:** Lambani tribe, who are generally poor and live in remote areas, use ethno veterinary medicine (EVM) for the primary healthcare of their animals. The use of plants reveals their interest in ethnomedicine and further research on these species could lead to the discovery of novel bioactive molecules for efficient management of diseases.

1. Introduction

Plants have been used in traditional medicine for thousands of years and herbal medicines are much in demand throughout the world. The knowledge of medicinal plants has been accumulated in the course of many centuries based on different medicinal systems such as Ayurveda, Unani and Siddha [1]. India is well known for significant geographical diversity which has favored the formation of different habitats and vegetation types. India is enriched with 15 % (3000–3500) out of 20,000 medicinal plants all over the world. About 90 % of these are found growing wild in different climatic regions

of the country [2]. India is also home to many languages, cultures and beliefs which have in turn contributed to the high diversity of traditional knowledge. Large populations in India still rely on traditional herbal medicine [3]. In India it is reported that traditional healers use 2500 plant species and 100 species of plants serve as regular sources of medicine [4]. Ethnobotanical knowledge has been documented from various parts of the Indian sub-continent [5,6]. Several medicinal herbs are flourishing in the state which has been in constant use by local inhabitants in serving to cure the ailments of livestock as ethnoveterinary medicine [7,8]

In Karnataka, many tribal groups and rural districts have been studied to document the ethnomedicinal value of plants used by them [9–11]. Studies have been carried out in the Chikmagalur and Chitradurga district as well [12,13]. A perusal of literature reveals that studies among the Lambani tribes are

*Corresponding author: Ramachandra Naik M. Department of P.G. Studies and Research in Applied Botany, Kuvempu University, Jnana Sahyadri, Shankaraghatta – 577451, Karnataka.

Email: renaikt@gmail.com

incomplete and traditional herbal healing knowledge gained from these tribes require documentation. The main objective of this ethno botanical investigation is the identification and documentation of various plants, used for traditional veterinary uses among the Lambani ethnic group from Chitradurga district. The study also includes documentation of the part of the plant used, method of preparation and its dosage for medical purposes.

2. Materials and methods

2.1 Study area

The Chitradurga district is situated in central Karnataka and lies between 14° 14' 02" N latitude and 76° 24' 00" E longitude (Figure 1). The district shows geographical information of soil being mostly loamy/sandy loam and is diversified by several ranges and hilly. The vegetation is tropical and temperate with similar kinds of scrubby forest. The Chitradurga district consists of six taluks, each inhabited by different communities. These communities have their own language and food habits, dress code, historical culture and socio-religious myths. The taluks considered in the present study include the Holalkere taluk, lying between 14° 02' 33.10" N latitude and 76° 11' 04.51" E longitude and with an elevation of 2299 feet, and the Hosadurga taluk, lying between 13° 45' 10" N latitude and 76° 17' 24.10" E longitude and with an elevation of 2345 feet. Each taluk is inhabited by different communities. In the present study, ethnoveterinary surveys were carried out in the Muddapura, Tuppadahally, Holalkere, Rangapura, Rangenalli and Guttegatti thanda (Lambani villages) in Chitradurga district. The former four villages belong to the Holalkere taluk while the latter two belong to the Hosadurga taluk.



Figure 1. Area of Study (showing the Map of India, Karnataka State, The Chitradurga District, The two taluks under study and the list of Lambani villages surveyed).

2.2 Studied tribal community

In the present study local herbalists, healers, farmers and village headman of the Lambani community from of different thandas were interviewed for responses regarding traditional knowledge. In southern India, the Lambani community is also called as Banjara, Lambadi, Lamani, Gor/Gour Banjara, Gour Maati, Naik and Sugali. The community has six main gothras – sub-communities with different religious beliefs – 6 gothras of Chauhaan (Jath), 12 gothras of Pamhar, 12 gothras of Vadatiya and their 14 Padaas or variants, 11 Gothras of Bannoth, 7 Gothras of Rathod (Blukya) and their 56 Paadaas or variants, 7 Gothras of Khamdarias and their 67 Paadaas or variants.

Villages of most gothras are majorly situated in the hilly regions; usually people of certain gothras are experts of ethno medical treatment of various diseases. The knowledge about ethno-veterinary medical plants is specialized by the Rathod and Chuhaan gothras and ethnobotanical 'nativaidyas' or country medicines are specialized by the Vadatiya and Meghawath Paadaas of the Rathod gothras amongst the Lambani community. These inhabitants of this community live in remote places and rely mainly on surrounding plant resources for food, fiber, shelter and medical care.

2.3 Data collection

The field work in Chitradurga district took place from February 2010 to August 2010. The tribal settlements were located through field surveys in this region. Traditional healers and practitioners with knowledge of medicinal plants were selected for the collection of ethnomedicinal information. One hundred fourteen respondents between the ages of 34 to 65 were consulted to gather information in the study area. An ex-post facto research design was adopted to assess the ethno-veterinary medicines used in the villages of Chitradurga district in Karnataka, India. The field survey was performed by interview model in their local language and in accordance to the WHO questionnaire [14]. The responses included details about the botanical and common name of the plant prescribed, part of the plant used, mode of preparation (decoction, paste, powder or juice), dosage and duration. The responses were confirmed through discussions with respondents who practiced the use of the documented plants for veterinary purposes.

Thirty nine plants have been studied and documented in the present study. The voucher specimens were collected and identified using relevant standard flora [15–17]. During the investigation, herbarium specimen was deposited in Department of Applied Botany, Kuvempu University, Shankaraghatta, Karnataka, India.

Results and Discussion

In southern India certain interesting characteristics accompany the remote local village's utilization of plants. Often many plant parts are used for medicinal purposes although they may have other potential utility values.

Ethnobotanical uses of 39 plants belonging to 24 families (Table 1) have been documented in the present study for

Table 1

List of plants used by the Lambani community for ethnoveterinary purposes.

Sl. No.	Botanical Name/Family Name/ Common Name/ Vernacular Name	Habitat	Voucher Number	Part used for Medicinal Purpose	Veterinary uses	Method of Treatment Preparation and Dosage
1	<i>Tylophora indica</i> (Burn.F)/ Aslepidaceae/ Admuttad sappu	Creeper	KUAB1011	Leaves	Lack of appetite	One handful of each of the leaves of <i>Tylophora indica</i> , <i>Allium sativum</i> , <i>Datura metel</i> , <i>Aegle marmelos</i> , 10 to 15 <i>Piper nigrum</i> and 2 spoons mustard are crushed properly. This paste is given orally twice a day along with ragi balls for 4 days.
2	<i>Datura metel</i> (Linn.)/ Solanaceae/ Black Datturi	Herb	KUABG1018	Fruit	Lack of appetite	One fruit of <i>Datura metel</i> is immersed inside the Ragi balls. This given orally once a day for 4 days.
3	<i>Terminalia chebula</i> (Retz)/ Combretaceae/ Halalekayi	Tree	KUABT1052	Seeds	For bloat	Two handfuls of <i>Tamarindus indica</i> are macerated in water. The macerated juice is mixed with <i>Terminalia chabula</i> powder and one jug full of water is added. The juice is given orally thrice a day.
4	<i>Leucus aspera</i> (Spreng)/ Labiatae/Common Tumbe gida	Herb	KUABR1032	Flowers and Leaves	Fever	Two handfuls of <i>Lucus aspera</i> with three handfuls of <i>Momordica cherantia</i> , juice of one lemon and two handfuls of ragi powder are mixed in water and ground. This is given twice a day for 3 days.
5	<i>Andrographis paniculata</i> L./ Acanthaceae/ Nelabevu	Shrub	KUABT1064	Leaves and Rhizome	Fever	Two handfuls of <i>Andrographis paniculata</i> with one spoon mustard, <i>Curcuma langa</i> , <i>Gingiber officinalis</i> are ground to get a decoction. This is given once daily for 3 days.
6	<i>Azadirachta indica</i> (A.Juss)/ Eliaceae/Neem/Bevu	Tree	KUABR1067	Leaves	Ephemeral fever	Small cup full of <i>Aloe barbadensis</i> with two handfuls of <i>Azadirachta indica</i> , two fruits of Arecanut and small cherry is mixed and ground. This is given orally thrice a day.
7	<i>Diospyros melanoxylon</i> (Roxb)/ Ebenaceae/ Coromandel/Tumari	Tree	KUABR1068	Leaves and fruits	Ephemeral fever	Two handfuls of <i>Diospyros melanoxylon</i> with one of <i>Allium sepa</i> , <i>Allium sativum</i> , ½ cup somber powder are ground and mixed with the 2 jugs of water. This is given orally twice a day for 2 days.
8	<i>Abutilon indicum</i> (L)/ Malvaceae/ Acchegida	Shrub	KUABM1014	Fruits and leaves	Diarrhoea	Two handfuls of <i>Abutilon indicum</i> are added in the cow's buttermilk and a little proposition of ragi powder is mixed to it and ground. This is given thrice orally for 3 days
9	<i>Vitex negundo</i> (Linn.)/ Verbinaceae/ Shivani	Shrub	KUABH1024	Root Leaves and Bark	Diarrhoea	One handful of <i>Vitex negunda</i> with <i>Cassia ariculata</i> is ground to get a decoction. This is given orally for 3 days.
10	<i>Syzygium cumin</i> L./jamun/ Myrtaceae/ Nerale	Tree	KUABH1028	Bark	Diarrhoea	The tree barks of <i>Syzygium cumin</i> and <i>Maduca longifolia</i> are taken and ground to get a decoction. This is given orally for 4 days.
11	<i>Tinospora cordifolia</i> (Miers)/ Menispermaceae/ Amrutaballi	Creeper	KUABR1051	Stem	Cough	Five inches of <i>Tenospora cordifolia</i> stem with 80 ml of <i>Aloe barbadensis</i> is added to 4 betel leaves, 1 <i>Allium sativum</i> , <i>Allium cepa</i> & 10 <i>Peper nigrum</i> are ground and mixed with 1 cup water. This is given orally twice a day for 3 days.
12	<i>Adhatoda vasica</i> , (Nees)/ Acanthaceae/ Vasa/	Herb	KUABR1065	Leaves	Cough	15 leaves of <i>Adhatoda vasica</i> addition, 15 leaves of <i>Tylophora indica</i> , 1 handful of <i>Albizia amera</i> , 1 or 2 leaves of <i>Aloe barbadensis</i> , 10 <i>Pepper nigrum</i> , 1 <i>Allium sativum</i> and 100 gm cherry are ground to get a decoction. This is given orally twice a day.

13	<i>Ailanthus malabarica</i> , DC/ Leaves Simaroubaceae/ White bean/ Hal-maddi	KUABR1054	Bark	Foot and mouth disease	One handful leaves of <i>Ailanthus malabarica</i> <i>Coriandrum sativum</i> , <i>Vitex negondo</i> , <i>Azadirachata</i> <i>indica</i> is ground to form a paste. This is mixed with beetroot juice and given orally once a day for 5 days.
14	<i>Holarrhena antidysenterica</i> Shrub (Roth) DC/Apocynaceae/ Easter Tree/Kurchi	KUABT1009	Root	T o e x p e l intestinal worms in calf	Roots are macerated with little quantity of salt and lemon juice. This is given orally once a day for 1 week.
15	<i>Semecarpus anacardium</i> L.f. Tree /Anacardiaceae/Mark nut/ Gerehannu	KUABM1033	Seeds	Foot and mouth disease	Four seeds of <i>Semecarpus anacardium</i> with 3 betel leaves, 1 <i>Allium cepa</i> , 2 spoon somber powder are ground with the 1 liter of water. This is given orally twice a day. Further <i>Terminalia chebula</i> powder is mixed with molten butter. The paste is smeared on the mouth. Paste made from leaves of <i>Azadirachta</i> <i>indica</i> are applied on the legs.
16	<i>Asparagus racemosus</i> (Willd)/ Creeper Liliaceae/ Satavari	KUABG16	Rhizome	Stimulant	Three Rhizome pieces are dried and ground to powder and mixed with ground nut seed cake. This is given orally once a day for 4 days.
17	<i>Aegle marmelos</i> (L)/ Rutaceae/ Tree Bael fruit/Bellad hannu	KUABG10 63	Leaves, Bark and Fruit	Prevent premature delivery	Two handful of each <i>Aegle marmelos</i> , <i>Celastrus</i> <i>paniculatus</i> and <i>Putrangiva roxburghii</i> leaves are cut into small pieces. They are mixed with cotton seed cake and given once in a day for 7 days.
18	<i>Momordica dioica</i> (Roxb.)/ Creeper Cucurbitaceae/ Kaksa	KUABT1051	Leaves, Fruit and Rhizome	For insect bites	The rhizome is macerated to get the juice. The juice is applied on the body.
19	<i>Azadirachta indica</i> (A.Juss)/ Tree Meliaceae/ Neem/Bevu	KUABH27	Leaves	For insect bites	Fresh leaves are crush and mixed with castor oil This is then applied on the body.
20	<i>Ficus benghalensis</i> L./ Tree Moraceae/Pepal tree/ Halad mara	KUABH1055	Stem	Maggot wound	White latex of <i>Ficus benghalensis</i> is applied on the affected parts.
21	<i>Nerium indicum</i> (Mill.) Tree Or Nerium oleander L./ Apocynaceae/ Oleander/ Kanagala Huvu	KUABR1027	Stem	Maggot wound	Latex of <i>Nerium indicum</i> is smeared on the affected part for 2 days.
22	<i>Aloe barbadensis</i> (Mill.)/ Herbs Liliaceae/Aloe vera/Lolesara	KUABM1018	Leaves	Anoestrus	One leaf of <i>Aloe barbadensis</i> is given orally for 6 days.
23	<i>Murraya koenigii</i> / Meliaceae/ Tree Kari leaf/Karibevu sappu	KUABM72	Shrub/ leaves	Repeat breeding problem	<i>Murraya koenigii</i> leaves given once in a day for 12 days.
24	<i>Mangifera indica</i> L./ Tree Anacardiaceae/ Mango/ Mavina hannu	KUABM1035	Leaves	Retention of Placenta	Half kg leaves of <i>Mangifera indica</i> , <i>Abutilon</i> <i>indicum</i> and <i>Erythrina indica</i> are given orally once a day.
25	<i>Abrus precatorius</i> L./ Creeper Fabaceae/ Crab's Eye/ Gulganji	KUABH1039	Leaves and Seeds	Vasoconstrictor	Four spoon seeds with 1 spoon jeera, 4 cloves, 1 almond, and 1 piece of camphor are fried together and powdered. The powder is mixed with two cherries and given orally once a day for 5 days.
26	<i>Mimosa pudica</i> (L.)/ Creeper Mimosaceae/ Lajwanti/ Muttidre munya	KUABT1057	Roots and Leaves	Mastitis	Two handfuls of <i>Mimososa pudica</i> with ½ kg <i>Caralluma laciantha</i> , one spoon <i>Curcuma langa</i> and little bit of lime juice are mixed together. This is smeared on the affected parts for 7 days.
27	<i>Ocimum sanctum</i> , L./ Herbs Labiatae/ Sacred Purple Basil/Tulasi	KUABT1034	Leaves, Seeds and Stem	Teeth crack	Equal leaf propositions of <i>Ocimum sanctum</i> and <i>Ocimum basillicumare</i> mixed as a decoction with cow butter. This is applied on the affected part twice a day for 6–8 days.
28	<i>Boucirosia laciantha</i> (Wight)/ Herbs Apocynaceae/ <i>Caralluma</i> / Manganakodu	KUABM1001	Stem	Foot wound	Two stem pieces of <i>Caralluma laciantha</i> with a little bit of lime and cherry are crushed together and applied on affected part for 4 days.
29	<i>Caralluma stalagmifera</i> Herbs (C.F.C.Fisch)/ Apocynaceae/ <i>Caralluma</i> /Vagaru mangte	KUABM1003	Stem	Burning wound	Stem of <i>Caralluma stalagmifera</i> and leaves of <i>Azadirachta indica</i> are crushed and mixed with oil and applied on affected areas.

30	<i>Dodonea viscosa</i> L./ Shrub Sapindaceae/ Hophbush/ Bandarke gida	KUABM1031	Leaves twig	Leg bandage	Goat milk is mixed with sheep dung and Ragi powder. This is applied on the affected part as a leg bandage with leaf twigs of <i>Dodonea viscosa</i> .
31	<i>Euphorbia tirucalli</i> , L./ Shrub Euphorbiaceae/ Pencil Plant/ Kalli	KUABM1025	Bark	Leg break	Bark of <i>Euphorbia tirucalli</i> is crushed and mixed with goat milk, sheep dung and 100gm of wheat powder. This is applied on affected areas with a bandage using leaf twigs of <i>Dodonea viscosa</i> .
32	<i>Canthium parviflorum</i> Shrub (Roxb.)/Rubiaceae/Wild Jasmine/Kakegida	KUABM1044	Leaves and Fruits	Septic wounds	Fresh leaves and fruit of <i>Canthium parviflorum</i> with seeds of <i>Azadirachta indica</i> are ground and mixed with sheep dung and applied on the wound.
33	<i>Solanum indicum</i> L. / Herb Solanaceae/Bush Tomato/ Kadu badane	KUABM1021	Fruits	Eye problem	Fruits are crushed and the fluid is applied on eyes.
34	<i>Butea manosperma</i> (Lam) Tree Taub./Fabaceae/Flame of the Forest, Butea/Mutthuga	KUAB1037	Bark	Sore throat	Bark is crushed and the juice is mixed with fruits of <i>Opuntia</i> with 3–4 powdered cloves. This is given orally for 7 days.
35	<i>Caralluma adscendens</i> var. <i>fimbriata</i> (Wall.)Gravely & Mayur./Apocynaceae/ Bili Mangte	KUABH1007	Stem	Paralysis and joint pain	Plant juice is mixed with coconut oil. This is heated for 5 minutes and applied on the affected parts.
36	<i>Solanum nigrum</i> L/ Herb Solanaceae/ Black nightshade/Kamni	KUABH1020	Leaves and Fruits	Fever	Plant parts are given orally for 7 days.
37	<i>Zizyphus jujuba</i> (Mill)/ Tree Rhamnaceae/Chinese jujube/ Kabli hannu	KUABR1067	Fruit	Cough and fever	Fruits of <i>Zizyphus jujuba</i> and <i>Allium cepa</i> are ground and mixed with 1 liter hot water. This is given orally for 6 days.
38	<i>Sida acuta</i> (Burm F.)/ Herb Malvaceae/ Spiny head sida/ Kaddi barlu	KUABR1061	Leaves	Cuts	The leaves of <i>Sida acuta</i> and <i>Azadirachta indica</i> are applied on cut wounds.
39	<i>Albizia amara</i> (Roxb.)/ Tree Mimosaceae/Krishna siris/ Tuglimara	KUABM1041	Leaves	Removing ticks	Leaves of <i>Albizia amara</i> and seeds of <i>Abrus precatorius</i> are ground and mixed with oil and smeared on the body.

their interesting therapeutic properties in treating various veterinary ailments such as lack of appetite, for bloat, fever, ephemeral fever, diarrhea, cough, foot and mouth disease, to expel intestinal worms, stimulate, prevent premature delivery, for insect bites, maggot wound, anoestrus, repeat breeding problem, retention of placenta, vasoconstrictor, mastitis, teeth crack, foot wound, burns, leg damage, septic wounds, eye problem, sore throat, paralysis and joint pain and removing ticks. Among the plants studied, most of them belonged to the Apocynaceae family (four species); two species each belonged to the Malvaceae, Anacardiaceae, Meliaceae, Mimosaceae, Solanaceae, Fabaceae and Liliaceae family. The rest species belonged to the Verbinaceae, Myrtaceae, Menispermaceae, Acanthaceae, Simaroubaceae, Rutaceae, Cucurbitaceae, Moraceae, Labiatae, Sapindaceae, Euphorbiaceae, Rubiaceae and Rhamnaceae family (one species each).

Figure 2 shows the percentages of different plant parts used for the preparation of medicine. Leaves (42%) were found to be the most frequently used plant parts in the preparation of medicine followed by fruits (15%), stems (13%), bark (11%), seeds (7%), roots (5%), rhizome (5%) and flowers (2%). Background literature on ethnobotanical studies confirmed that leaves are the major portion of the plant used in the treatment of diseases [18,19]. The methods of preparation fall into the following main categories – plant parts applied as a paste, juice extracted from the fresh parts of the plant and plants used to prepare

decoction in combination with water or in combination with other plants.

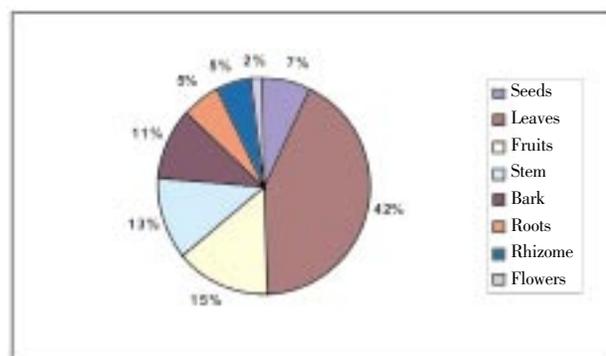


Figure 2. Percentage of plant parts used for the preparation of medicine by the Lambani community, Chitadurga District, Karnataka, India

People in rural areas either use a single plant to treat diseases or a combination of plants for more specific ailments. Examples of the former are as follows – use of bark juice of *Ficus religiosa* L., bark juice is given to regularize a woman's monthly period [20]; *F. bengalensis* (KUABH1055) shows an anti-diabetic potential [21,22]. Such examples of traditional knowledge among the Lambani tribe include the use of rhizome of *Momordica dioica* Roxb. (KUABT1051) to treat insect bites; *Ficus benghalensis* L. (KUABH1055) against maggot wounds; *Aloe barbadensis* (KUABM1018) for anoestrus;

Solanum indicum L. (KUABM1021) for eye problems and *Solanum nigrum* (KUABH1020) for fever. On the other hand, examples among the Lambani tribe wherein a combination of plants are used include – a mixture of *Tylophora indica* (Burn. F) (KUAB1011), *Allium sativum*, *Datura metel*, *Aegle marmelos*, *Piper nigrum* and mustard being used together for lack of appetite; the Guttegatti village headmen who were included in the present study use *Datura metel* (KUABG1018) and Ragi balls for curing lack of appetite. Workers like Rana and Shobha [23,24] reported that a combination of *Aegle marmelos* and *Gymnema sylvestre* is used to treat diabetes. Different groups of tribes use different ingredients for curing a disorder. Also, a plant could be used by different localities to treat different diseases. While we report that Lambani communities use *Terminalia chebula* (KUABT1052) and *Tamarindus indica* for curing bloat, the local people in Kandra district use *Tamarindus indica* and *Valeriana jatamansi* for treating foot and mouth disease [25]. *Terminalia bellirica* is utilized for treating foot and mouth disease [26], while *Terminalia chebula* Ritz. is used for treating body heat [27]. A ground paste of *Leucas aspera* (Spreng.) (KUABR1032), *Momordica charantia*, Lemon and ragi powder is used to cure fever by the Lambani communities, however, Rajkumar and Shivanna [28,29] reported that *Leucas aspera* (Spreng.) is used as an ingredient to cure cough, broken horns and sore nose amongst tribes in Sagar taluk while Ai Lan Chew reported the antioxidant and antibacterial activity of *Leucas aspera* [30]. Literature reveals that *Tinospora cordifolia* is used to cure herpes, malarial fever and venereal disease [31,32] but in our study *Tinospora cordifolia* (KUABR1051) is being used to cure cough.

Similarly while we report that a decoction of *Diospyros melanoxylon* (KUABR1068), *Allium cepa*, *Allium sativum* is used to cure Ephemeral fever, the Khare–vokkaliga community of the Uttara Kannada district use *A.sativum* to treat cough and earache, and *A. cepa* for fever, cold, and eye disorders [33]. Diarrhoea is cured by different methods by different villages of the Lambani tribe. The Muddapura village headmen use *Abutilon indicum* (KUABM1014), buttermilk and ragi powder for curing Diarrhoea but the Holalkere village headmen follow two steps to cure Diarrhoea, firstly using a decoction of *Vitex negundo* (Linn.) (KUABH1024) and *Cassia auriculata* followed by the use of a decoction of *Syzygium cumini* (KUABH1028) and *Madhuca longifolia* to cure Diarrhoea. Tribes of the Shimoga district use *Syzygium cumini* to cure dysentery; bark of *Holarrhena pubescens* to cure ring worm [27] and poor milk production [29]; however the Lambani tribes use *Holarrhena antidysenterica* (Roth) (KUABT1009) to expel intestinal worms in calf. Also, we document that a combination of *Aegle marmelos* (KUABG10 63), *Celastrus paniculatus* and *Putranjiva roxburghii* is used for prevent premature delivery; other researchers have reported that *Aegle marmelos* and *Centella asiatica* are used combination for cure cardiac problem [27]. These herbs have also been documented in the traditional system of medicine by Ayurveda, Unani and Siddha [34].

Caralluma has been reported to be anti-inflammatory, protect gastric mucosa and have antidiabetic properties [35–37]; we report that a mixture of *Mimosa pudica* (KUABT1057), *Caralluma lacinantha* and *Curcuma longa* is used for Mastitis. *Caralluma adscendens* var. *fimbriata* (KUABH1007) and

coconut oil is used together by the Lambani tribes to cure paralysis and joint pain; earlier reports also indicate the use of *Caralluma tuberculata* for paralysis [38]. Tribes of Chhattisgarh use *Sida acuta* for colic pain [39] and extracts of *Sida cordifolia*, *Evolvulus alsinoides* and *Cynodon dactylon* have been reported to be used for curing neurodegenerative diseases in humans [40]; the Chellipale community of Tamil Nadu use it for headache [41] while the Lambani community in Chitradurga district region use *Sida acuta* (KUABR1061) for cuts and wounds.

Ethno veterinary survey is of crucial importance in finding some miraculous medicines for curing various veterinary diseases. The list of folk medicinal plants from the southern region of Karnataka and their utilization will provide basic data for further studies aimed at conservation, cultivation; need to explore traditional medicine and economic welfare of rural and tribal population of the region.

Conclusion

Agriculture and animal husbandry is the primary occupation of majority of population in Lambani community. The present communication deals with 39 plants from 24 families having 26 different ethno–veterinary uses. These records indicate the ethno–veterinary wealth of Lambani community in Karnataka. Documentation of veterinary uses is very important to our society. It will not only help in purpose of plant conservation and economical utilization of folk plants but would also lead to development of employment generation among the local people. It provides raw material for production of pharmaceutical products as well. Further survey and research focusing on the medicinal plants documented in this study might give information regarding the hunt for bioactive compounds and the discovery of new drugs to fight diseases in an effective manner.

Conflict of interest statement

We declare that we have no conflict of interest.

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