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Traditional veterinary healthcare practices in Shimoga district of Karnataka, India

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An ethno-medico-botanical field survey was conducted during 2007-08 to document the veterinary healthcare practices followed by local communities residing in Shimoga district of Karnataka, India. The information on plant species and their local name, plant parts used, preparation of drug, dosage and duration was obtained from the traditional herbal healers settled in 10 selected villages by the semi-structured interview technique. A total of 52 plant species of 48 genera and 38 families used for cure of 19 veterinary ailments were identified. Out of 52, there were 22 tree, 16 herb, 8 climber and 6 shrub species. The most utilized plant part for the preparation of drug was the leaf followed by bark, underground parts (root, rhizome and bulb), seed, fruit, and stem and in some cases, latex. Diseases and disorders of the study area include black quarter, broken horn, dysentery, fever, snake bite and scorpion sting, weakness and wound. The present study pointed out that the community people in Shimoga district have traditional knowledge to treat veterinary ailments. Some of the ethno-formulations have been documented for the first time in India.

Keywords: Medicinal plants, Ethnomedicine, Veterinary ailments, Shimoga, Karnataka

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India is rich in cultural and floral diversity and also possesses vast livestock wealth. The rural people of India still depend upon traditional herbal remedies for his own as well as his livestock healthcare. People believe that the herbal remedies are low cost therapies and safe. In addition, there is a cultural attachment of folk people to herbal remedies1. The precious ethnomedicinal knowledge of various human cultures requires documentation and scientific validation. In Karnataka state, a few records on ethno-veterinary practices are available2-7. There are no previous records of documentation of ethno-veterinary knowledge from Shimoga district, which is one of the rich biodiversity centers situated in the southern part of Karnataka. The present paper is an attempt to document medicinal plants used for veterinary healthcare by the local communities of Shimoga district, Karnataka.

Methodology
Shimoga district, located in the mid-south western part of Karnataka state and also in the heart of the Western Ghats region, is one of the hot-spots of biodiversity in India. Shimoga district is spread over an area of 8465 sq km and lies between 13º 27' and 14º 39' N latitude and between 74º 37' and 75º 52' E longitude at a mean altitude of 640 m and receives an average rainfall of 1813.9 mm. Temperature ranges from 15º to 36º C. The total livestock population of the district is 9,23,3628. The study area is known for its natural vegetation comprising of evergreen, semi-evergreen, moist- and dry-deciduous type of forests having a variety of medicinal plants. Agriculture plays a major role in the economy of this district and paddy, areca nut, sugarcane, and cotton are the main crops. Tunga, Bhadra, Ambiligola and Anjanapura reservoirs provide sources for irrigation. Local residents in the study area belonged to different castes and communities such as Adikarnataka, Besta, Brahmin, Idiga, Kuruba, Muslim and Vokkaliga, who practiced traditional herbal therapy for veterinary healthcare purpose. There were 17 folk herbal practitioners aged between 32 and 80 yrs of age who were interviewed. Among them, 15 were male and 2 female respondents under the age group of 28-72 yrs. Most herbal healers have 15-25 yrs of experience in the treatment of diseases of domestic animals.

Ethno-medico-botanical field surveys were carried out in 10 randomly selected villages–Aaraga gate,
Arasalu, Basavane, Hedli, Hosakoppa, Iduvane, Koduru, Ripponpete, Shivapura and Talagunda of Shimoga district during 2007-08. The herbal practitioners in these villages were identified based on previous visits to the study sites and through the village head or local agencies. The information on their age, sex, religion and ethno-veterinary medicinal knowledge was also collected. Each village was visited at least thrice in rainy, winter and summer seasons. The ethno-medicinal information was collected through a semi-structured interview technique and discussion with the traditional herbal healers and knowledgeable elders. In semi-structured interview technique, a list of questions and topics that need to be covered was prepared as described by Martin. Information on the plant species used to treat veterinary ailments, their local name, family, parts of the plant, method of drug preparation and mode of use was collected. The information collected was confirmed by discussion with the owners of the treated animals. The data of ethno-formulation were also compared with the already existing ethno-botanical literature. Vernacular names of live plant specimen of the study area were documented. Plants were identified taxonomically using the standard manuals, confirmed with plant taxonomists and photographed. Plant specimens were also collected for the preparation of herbarium. They were deposited at the Department of Applied Botany, Kuvempu University.

Results and discussion
The present study accounts for 52 plant species (35 wild, 17 cultivated plants) of 48 genera and 38 families for cure 19 veterinary ailments (Table 1). Among them, 22 were tree, 16 herb, 8 climber and 6 shrub species. Apocynaceae was the most preferred family followed by Lamiaceae, Piperaceae and Myrtaceae. The most used plant part in the preparation of remedy and most commonly used herbal formulations are detailed in Fig. 1. The herbal formulations were prepared afresh and administered both internally (oral) as well as externally. The efficacy of the ethno-formulations was confirmed by discussion with the owners of the veterinary animals. The majority of the formulations were prepared using a combination of plants. For example, leaves of Artocarpus lakoocha in combination with roots of Mimosa pudica, seeds of Cuminum cyminum and Brassica nigra for bone fracture; leaves of Cuminum viviparam, Coleus amboinicus and Cucurbita maxima in combination with bark of Syzygium cumini and Aporusa lindleyana for snake bite/scorpion sting, and tender leaves of Cassia fistula in combination with leaves of Alangium salvifolium for dog bite. Occasionally, single plant species was used for specific disease. For example, Careya arborea for corneal opacity, Terminalia bellirica for foot and mouth disease, Holarrhena pubescens to increase lactation and Ixora coccinea for wound.

During the survey, some noteworthy observations, which were not mentioned in the literature, have been recorded. For example(s), the use of Vallaris solanacea for treating bone fracture, leaves of Cuminum viviparam and Zanthoxylum rhetsa in combination for black quarter, leaves of Aporusa lindleyana and Moringa oleifera for dog bite, leaves of Ixora coccinea, leaves of Lobelia nicotianaeefolia and Ervatamia heyneana for curing wound, leaves of Rubia cordifolia for foot and mouth disease and bark of Anacardium occidentale and leaves of Leucas aspera in combination for the treatment of broken horns.

The drug preparations and their therapeutic uses have always differed from region to region. For example, local folk people of Kangra district in Himachal Pradesh used Tamarindus indica and Valeriana jatamansi, while herbal healers of Uttarakhand used Chenopodium ambrosiodes for treating foot and mouth disease in cattle. However, traditional practitioners of Shimoga district used Terminalia bellirica or Rubia cordifolia to treat the same disease. Jadeja et al. also reported that Terminalia bellirica is used to treat foot and mouth disease. Similarly, Ethiopian traditional healers used Achyranthes aspera for treating bone fracture, where as local practitioners of Uttara Kannada district of Karnataka used Machillus macrantha and Cinnamomum wightii in combination for this purpose. But in the study area, two herbal formulations - Artocarpus lakoocha and Mimosa pudica in combination, and Vallaris solanacea alone were used for treating the bone fracture.

The local healers also used certain plant species to treat the most common multiple ailments. For example, Ervatamia heyneana to treat snake bite, dysentery and wound, Cuminum viviparam for black quarter, snakebite/scorpion sting and dysentery, and Anacardium occidentale for broken horn and weakness. Herbal healers had their own methods of the preparation of herbal formulation, mode of application, dosage and duration.
<table>
<thead>
<tr>
<th>Ailment</th>
<th>Botanical name (Local name)</th>
<th>Family</th>
<th>Mode of uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black quarter</td>
<td><em>Crinum viviparam</em> (Lam.) Hemadri (Vishamungli)</td>
<td>Amaryllidaceae</td>
<td>One handful of leaves of <em>C. viviparam</em> ground with 2 fruits of <em>Zanthoxylum rhetsa</em> (Roxb.), DC. (<em>Junamana mara; Rutaceae</em>), 2 bulbs of <em>Allium cepa</em> L. (<em>Eerulli; Liliaceae</em>) and 3-4 fruits of <em>Piper nigrum</em> L. (<em>Karimenasara; Piperaceae</em>) and made into paste, given orally with hot water once daily for 3-4 days.</td>
</tr>
<tr>
<td></td>
<td><em>Erythrina indica</em> (L.) Bent. Ex Kurz (Aanangi)</td>
<td>Bignoniaceae</td>
<td>Bark of <em>O. indicum</em> and <em>Terminalia bellirica</em> (Gaertner) <em>Roxb.</em> (<em>Tulaare; Combretaceae</em>) ground with pepper and cloves of garlic (<em>Allium sativum</em> L.; <em>Belliuli; Liliaceae</em>) in rice soaked water into paste and given orally twice daily for 3 days.</td>
</tr>
<tr>
<td></td>
<td><em>Moringa oleifera</em> Lam. (Nugge)</td>
<td>Moringaceae</td>
<td>One handful of bark ground with half teaspoon of seeds of <em>Trachyspermum ammi</em> (L.) <em>Sprague</em> (<em>Azvana; Apiaceae</em>) and pepper, and 1 bulb each of garlic and onion and given orally twice daily for 2 days.</td>
</tr>
<tr>
<td>Bone fracture</td>
<td><em>Artocarpus lakoocha</em> Roxb. (Vaate huli)</td>
<td>Moraceae</td>
<td>Ten leaves of <em>A. lakoocha</em> ground with 50 g roots of <em>Mimosa pudica</em> L. (<em>Mattidare muni; Mimosaceae</em>), half teaspoon of cumin seeds (<em>Cuminum cyminum</em> L.; <em>Jirigae; Apiaceae</em>) and mustard seeds (<em>Brassica nigra</em> (L.) G. Koch; <em>Karirastes; Brassicaceae</em>), heated and applied topically on the fractured part for 15 days.</td>
</tr>
<tr>
<td>Broken horn</td>
<td><em>Anacardium occidentale</em> L. (Geru)</td>
<td>Anacardiaceae</td>
<td>Equal quantity of bark of <em>A. occidentale</em> ground with leaves of <em>Leucas aspera</em> Spr. (<em>Tumbae; Lamiaceae</em>), heated and paste bandaged with cloth around the affected area until cure.</td>
</tr>
<tr>
<td>Corneal opacity</td>
<td><em>Pergularia daemia</em> (Forssk.) Chiov. (Kuntigeballi)</td>
<td>Asclepiadaceae</td>
<td>Leaf juice dropped topically on the affected eye, twice daily for a week.</td>
</tr>
<tr>
<td></td>
<td><em>Careya arborea</em> Roxb. (Kowlu)</td>
<td>Lecythidaceae</td>
<td>Bark juice mixed with cow’s milk (1:1) dropped (3 drops) into affected eye until cure.</td>
</tr>
<tr>
<td>Delayed parturition</td>
<td><em>Erythrina indica</em> Lam. (Haluvana)</td>
<td>Fabaceae</td>
<td>Equal quantity of bark of <em>E. indica</em> and <em>Pterocarpus marsupium</em> <em>Roxb.</em> (<em>Honke; Fabaceae</em>) ground into juice given orally with food twice daily for a week.</td>
</tr>
<tr>
<td>Dog bite</td>
<td><em>Cassia fistula</em> L. (Kakke)</td>
<td>Caesalpinaceae</td>
<td>Young leaves of <em>C. fistula</em> ground with bark of <em>Alangium salvifolium</em> (L.f.) <em>Wang. (Ankol; Alangaceae</em>) in cow’s butter milk and given orally twice daily for a week.</td>
</tr>
<tr>
<td></td>
<td><em>Aporousa lindleyana</em> (Wight) Baillon (Salle)</td>
<td>Euphorbiaceae</td>
<td>Leaves of <em>A. lindleyana</em> and <em>M. oleifera</em> ground into paste mixed with cow’s curd and given orally once daily for a week.</td>
</tr>
<tr>
<td>Dysentery</td>
<td><em>Jatropha curcas</em> L. (Naati kalli)</td>
<td>Euphorbiaceae</td>
<td>Equal quantity of stem bark of <em>J. curcas</em> ground with leaves of <em>C. viviparam</em>, bark of <em>Ervatamia heyneana</em> (Wall.) <em>T. Cooke</em> (<em>Madarasa; Apocynaceae</em>) and tender leaves of <em>Psidium guajava</em> L. (<em>Peralae; Myrtaceae</em>) into paste. Paste given orally once daily for 2 days.</td>
</tr>
<tr>
<td>Ectoparasites (Ticks and mites)</td>
<td><em>Sapindus laurifolia</em> Vahl. (Antuvala)</td>
<td>Sapindaceae</td>
<td>Fruit juice applied externally over the body of cattle once daily for a week and then washed.</td>
</tr>
<tr>
<td>Fever</td>
<td><em>Tinospora cordifolia</em> (Willd.) Hook. F. &amp; Thomson (Amruta balli)</td>
<td>Menispermaceae</td>
<td>One handful of leaves of <em>T. cordifolia</em> ground with bark of <em>Holarrhena pubescens</em> (Buch.-Ham.) <em>Wall. ex G. Don. (Kodasiga; Apocynaceae</em>) and stem bark of <em>Gymnema sylvestre</em> (Retz.) <em>R. Br. ex Schultes (Madhumashini; Asclepiadaceae</em>) boiled in 4 liters of water and reduced to one liter decoction. One cup of decoction given orally once daily for 2-3 days.</td>
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Contd.
The present study revealed that all respondents of the study area were male individuals, who learnt traditional healing therapy from their parents and grandparents. Rural people of Shimoga district have faith in herbal medicines and utilized locally available plants for veterinary healthcare as they are easily available and economical. The medicinal knowledge of ethno-veterinary practices in the study area needs to be validated scientifically for the development of potential novel drugs for the
healthcare of veterinary animals and humans, as well.

Acknowledgement

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References


Fig. 1—Plant parts used for drug preparation (A) and preferred herbal formulation (B)