

Ethnoveterinary Herbal Remedies of Adivasi Communities in the Eturnagaram Tribal Area, Mulugu District, Telangana State, India

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Abstract: *This study documents the indigenous ethno-veterinary knowledge of Adivasi communities (Koya, Koyadora, and Guttikoya) in the Eturnagaram mandal of Mulugu district, Telangana, India. The ethno-medicinal surveys were conducted in the year of 2025, across 12 tribal villages. Data were collected via structured questionnaires and interviews with traditional healers, village heads, and livestock owners. Plant specimens were identified taxonomically using regional floras and deposited in the Department of Botany, Kakatiya University, Warangal. A total of 20 plant species belonging to 18 families and 20 genera were documented for treating various livestock ailments. Key therapeutic applications included treatments for Foot and Mouth Disease (FMD), stomatitis, anthrax, wounds, and digestive disorders. The study also recorded unique tribal taxonomy for classifying goats and sheep based on morphological characteristics. The Adivasi communities possess a rich, orally transmitted repository of veterinary knowledge. However, this knowledge faces the risk of extinction due to environmental degradation and shifting livelihoods. Documentation of these remedies offers potential for developing low-cost, accessible animal healthcare alternatives and warrants further pharmacological validation.*

Keywords: Ethnoveterinary, Koya, Mulugu District, Livestock Health, Telangana

1. Introduction

Ethnobotany, the interdisciplinary study of the dynamic relationship between plants and people, serves as a critical repository of traditional ecological knowledge. India, often described as a botanical garden of the world, holds a vast heritage of documented and undocumented traditional herbal medicine practices [1]. The World Health Organization [2], estimates that over 80% of the global population relies primarily on traditional medicine for healthcare, advocating for its integration due to fewer side effects and cultural acceptability. Historically, primitive societies have depended on herbal remedies for treating ethno-veterinary diseases since the time of immemorial [3]. Records indicate that ethno-veterinary medicine was practiced as early as 1800 BC during the reign of King Hammurabi of Babylon, who formulated laws regarding veterinary charges for treating cattle. In rural and tribal India, indigenous knowledge regarding animal healthcare is acquired by traditional healers and orally transmitted from one generation to the next. These practices often involve age-old home remedies and associated medico-religious rituals that are cost-effective, safe, and based on locally available resources [4]. Despite their efficacy, these traditional veterinary systems are rarely documented in written form. The Adivasi (tribal) communities of Telangana have their own distinct system of veterinary medicine, but this knowledge is increasingly threatened by changing livelihoods, environmental degradation, and the erosion of traditional practices. This study aims to document the community-based solutions of tribal farmers in the Eturnagaram forest area for animal health problems, preserving this knowledge for future research and potential drug discovery.

2. Materials and Methods

2.1 Study Area

The study was conducted in the Eturnagaram Tribal Area, located in the Mulugu district of Telangana State, India (approximately 250 km from Hyderabad). The region is characterized by dense deciduous forests and is inhabited primarily by Adivasi communities, including the Koya, Koyadora, and Guttikoya tribes. The survey covered 12 specific villages: Singaram, Ekkela, Bhutaram, Kanthanapally, Royyuru, Shankarajpally, Buttaigudam, Chelpaka, Muppanapally, Laxmipuram, Kannaigudem, and Thupakulagudam.

2.2 Data Collection

Ethnobotanical field trips were conducted in the year 2025. Information regarding ethnoveterinary plants and herbal remedies was gathered from dominant tribal groups (primarily Koya) through structured questionnaires and open discussions. The questionnaire covered the following data points like local names of ethno-veterinary plants, livestock health conditions, affected body parts, symptoms, causes, diagnostic features as understood by traditional healers, the plant parts used, dosage, mode of administration and duration of treatment. Data validation was performed by cross-referencing information with village heads, traditional practitioners, local veterinary doctors, and elders of the *Gudem* and *Gumpu* (tribal hamlets).

2.3 Plant Identification and Preservation

Collected plant specimens were identified taxonomically with the assistance of regional floras [5], [6] and local flora guides. The Voucher specimens, including fruits, seeds, and

flowers were preserved, mounted and deposited in the Herbarium of the Department of Botany, Kakatiya University, Warangal, Telangana, for future reference.

3. Results and Discussion

The tribal population in the study area primarily depends on agriculture, agricultural labor, dairy farming, and animal husbandry. The livestock population consists mainly of goats, sheep, cows, buffaloes with sheep and goats being the most predominant. The tribes possess a unique indigenous taxonomy for classifying goats and sheep based on color and morphological characteristics (**Table 1**). For instance, *Erra meka* refers to completely red animals, while *Nalugu kommula gorre* denotes animals with four horns. Conversely, cows and buffaloes are not classified with such specific regional nomenclature.

Tribal healers diagnose diseases based on observable symptoms, utilizing knowledge passed down from ancestors. Common ailments identified include Foot and Mouth Disease (locally known as Galikuntu vyadi, stomatitis (Sollu, Noti pundlu), bloat (Kadupu ubbatam), and anthrax (**Table 2**). The tribes also identify specific poisonous plants in the forest that cause harm to cattle, such as *Strychnos* (causing stomach swelling) and unripe *Sorghum* (causing tongue paralysis and death). A total of 20 plant species belonging to 18 families were documented for treating livestock ailments. The most frequently treated conditions included wounds, digestive disorders (diarrhea, colic), respiratory issues, and infectious diseases like Anthrax and FMD (**Table 3, Fig. 1**).

The tribal communities employ specific preventive strategies to maintain livestock health. They actively prevent cattle from grazing on toxic plants such as *Annona* (Custard Apple) leaves and *Ipomoea* (Rubber vine), which are known to cause digestive disturbances and diarrhea. Furthermore, they protect livestock from agricultural hazards, including pesticide-sprayed fields and Bt-Cotton leaves containing toxic crystal proteins. Seasonal management is also practiced, during the rainy season, cattle are moved to specific forest areas to graze on safe tree foliage to prevent seasonal diseases. The tribes have identified several wild plants that are toxic to cattle (**Table 4**).

The documented species were traditionally employed for a range of livestock disorders including respiratory complaints, diarrhoea, wounds, eye problems, colic, inflammation, stomatitis, dog bite and foot-and-mouth disease. The diversity of plant parts used indicates that traditional veterinary knowledge involves flexible utilization of locally available plant resources. Leaves were among the most frequently reported plant parts, while roots, stems, bark, fruits, latex, seeds and whole plants were also utilized. The dominance of families such as Fabaceae, Mimosoideae, Asteraceae, Rutaceae, and Caesalpiniaceae in the ethno-veterinary repertoire aligns with findings from other tribal regions in India, suggesting a broad pharmacological potential in these taxa. The use of *Annona squamosa* leaves for FMD and *Atlantia monophylla* for Anthrax highlights specific, high-value interventions that warrant pharmacological validation.

The present investigation demonstrates that Adivasi communities of the Eturnagaram tribal area maintain a diverse body of traditional knowledge concerning plant-based livestock healthcare. Twenty plant species were documented during the survey, representing a broad range of taxonomic groups and plant growth forms. Earlier ethnobotanical research has established that Koya communities of the Eturnagaram region possess substantial knowledge of medicinal plants [7]. documented differences in plant recognition and medicinal knowledge among Koya communities inhabiting the Eturnagaram Wildlife Sanctuary, indicating that traditional botanical knowledge can vary among communities even within the same ecological region [8]. reported 21 medicinal plant species used in ethnoveterinary practices by Koyas of Pakhal Wildlife Sanctuary. The present study therefore contributes additional locality-specific information by documenting practices reported from 12 villages of the Eturnagaram tribal area and by recording not only medicinal plants but also indigenous livestock terminology, symptom-based disease recognition and preventive practices.

The prominence of leaves among the plant parts reported in the present study is noteworthy. Leaves are generally readily available, can be harvested without necessarily killing the entire plant and can often be processed easily. However, the collection of roots, bark and whole plants may have greater implications for plant survival. Sustainable harvesting practices should therefore be encouraged, particularly for species occurring in forest habitats. The documentation of potentially poisonous plants is equally significant. Indigenous livestock owners often develop practical knowledge of plants that should be avoided by grazing animals. Such knowledge can complement formal livestock-management practices, although laboratory-based toxicological investigations are necessary to establish the chemical basis and degree of toxicity. Another important finding is the presence of indigenous animal classification. The local names used for sheep and goats are based on colour, markings, ear morphology and horn characteristics. This terminology represents an important component of bio-cultural knowledge and demonstrates that ethno-veterinary knowledge extends beyond medicinal plant use to include animal identification, husbandry and disease recognition.

The preservation of such knowledge is increasingly important because traditional knowledge is largely transmitted orally. Changes in occupation, modernization, reduced dependence on forest resources, migration, environmental degradation and increasing access to modern veterinary services may influence the transmission of indigenous knowledge to younger generations.

4. Conclusion

This study successfully documented 20 ethno-veterinary plant species used by the Koya tribes of the Eturnagaram area. These results emphasize the significance of traditional knowledge for maintaining livestock health in resource-constrained environments. The documented plants, particularly those used for treating infectious diseases like Anthrax and FMD and offer valuable leads for bio-chemical and pharmacological research. There is an urgent need to

conserve these medicinal plants, potentially through tissue culture and micropropagation techniques, as habitat loss threatens their availability. Furthermore, integrating validated traditional remedies with modern veterinary practices could provide a sustainable, low-cost healthcare model for tribal livestock owners.

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Table 1: Regional names of goats and sheep based on their morphological and phenotypic characteristics

Regional name	Morphological characteristic
Erra meka	Completely red in colour.
Khyli meka	Ventral region black; dorsal region white.
Bolli meka	White spots on the facial and head region.
Bingi meka	Possesses small hanging ears.
Sodi meka	Completely white in colour.
Muchey gorre	Light brown in colour.
Chekkar gorre	Gold spots on the jaws.
Nalugu kummula gorre	Possesses 4 horns.
Mulladi gorre	Possesses small ears.
Nalla gorre	Completely black in colour.
Thela gorre	Completely white in colour.

Table 2: Tribal diagnosis of livestock diseases based on symptoms

Local name of the disease	Observed symptoms
Galikuntu vyadi (FMD)	Difficulty walking due to wound formation on hooves/mouth.
Sollu, noti pundlu (Stomatitis)	Frequent salivation and mouth ulcers.
Kadupu ubbatam (Bloat)	Swelling of the stomach, heavy breathing, loss of appetite.
Muthi vapu	Swelling of the mouth region.
Chitka rogam (Enterotoxemia)	Sudden death due to rapid rise in body temperature.
Davada vapu / Gonthu vapu	Swelling of jaws and neck region.
Purru kottuta (Diarrhea)	Loose motions.
Daggu, Jalubu (Cold/Cough)	Frequent coughing and nasal discharge.
Ayasam (Respiratory distress)	Difficulty in breathing.

Table 3: Ethnoveterinary medicinal plants and their traditional uses in livestock healthcare

Sl. No.	Scientific Name	Family	Local Name	Part Used	Therapeutic Use
1	<i>Acacia nilotica</i> (L.)	Mimosoideae	Nallathumma	Spines	Colic pain, body pain
2	<i>Achyranthes aspera</i> L.	Amaranthaceae	Vuttareni	Leaf	Dog bite
3	<i>Adhatoda vasica</i> Nees	Acanthaceae	Addasaram	Leaf	Cough and cold
4	<i>Andrographis paniculata</i> (Burm.f.)	Acanthaceae	Nelavemu	Whole plant	Dysentery
5	<i>Annona squamosa</i> L.	Annonaceae	Sithaphalam	Leaf	Foot and Mouth Disease (FMD)
6	<i>Atlantia monophylla</i> (Roxb.)	Rutaceae	Adavi nimma	Stem, bark	Anthrax
7	<i>Atylosia scarabaeoides</i> (L.)	Fabaceae	Adavi kandi	Leaf	Diarrhea
8	<i>Bauhinia racemosa</i> Lam.	Caesalpiniaceae	Adavi Avise	Leaf juice	Redness of eye
9	<i>Caesalpinia bonduc</i> (L.)	Caesalpiniaceae	Gacha kaya	Root	Expulsion of placenta (post-delivery)
10	<i>Calotropis procera</i> (Aiton)	Asclepiadaceae	Tellagilledu	Leaf, latex	Inflammation, Snake bite
11	<i>Capparis zeylanica</i> (L.)	Capparidaceae	Totla teega	Stem, bark, root	Colic, Convulsion
12	<i>Cissus quadrangularis</i> L.	Vitaceae	Nalleru	Stem	Asthma, wounds, dog bite
13	<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	Govinda gadda	Leaf, Tubers	Stomatitis
14	<i>Fioria vitifolia</i> (Heyne)	Malvaceae	Adavibenda	Stem, Bark	Ephemeral fever
15	<i>Gardenia latifolia</i> Aiton	Rubiaceae	Karinga	Leaf	Wounds, Pain
16	<i>Semecarpus anacardium</i> L.f.	Anacardiaceae	Nallajeedi	Fruit	Hemorrhagic conditions
17	<i>Strychnos nux-vomica</i> L.	Loganiaceae	Vishamusti	Root	Chronic wounds
18	<i>Terminalia chebula</i> (Retz.)	Combretaceae	Karakakaya	Dry fruit	Diarrhea
19	<i>Xanthium strumarium</i> L.	Asteraceae	Marulamatangi	Leaf	Chronic wounds
20	<i>Ziziphus xylopyrus</i> (Retz.)	Rhamnaceae	Gotiki	Root	Anthrax

Table 4: Wild plant species that may cause harm to cattle

Plant name (Local/Scientific)	Toxic effects observed
Visha mushti (<i>Strychnos</i> spp.)	Swelling of stomach.
Ippa puvvulu (<i>Madhuca</i> spp.)	Stomach pain, breathing problems.
Narrenga (<i>Albizia</i> spp.)	Indigestion.
Unripe <i>Sorghum</i> spp.	Tongue paralysis (hanging out), potential fatality.
Vyari bama (<i>Parthenium</i> spp.)	Bronchial asthma due to pollen allergy.

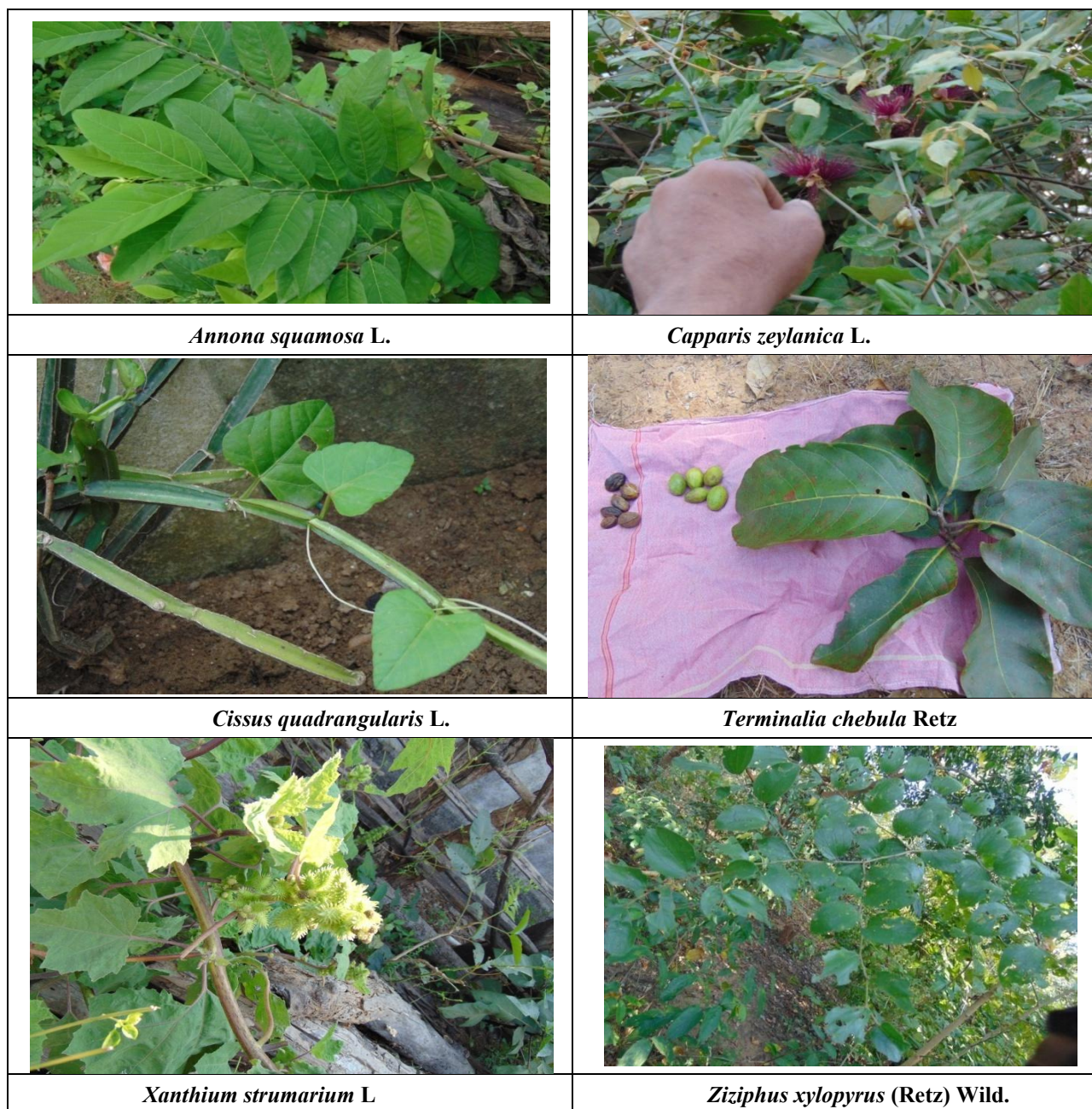


Figure 1: Ethnoveterinary plants