



## Ethnoveterinary practices of tribes in Odisha, India: A review

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### Abstract

Biological diversity, often used for the term biodiversity, in the simplest word means the variation and variety of life. Biodiversity being the amalgamation of dual words i.e. 'Bios' meaning 'life' and 'diversities' meaning 'variety' or 'difference'. Medicinal plants aids in the treatment of several diseases from the Vedic era, for both plants and animals. Simply, medicinal herbs are the localized heritage and patrimony with worldwide significance. Globe is equipped with a rich plethora of herbal medicines which have every time been the crucial form of medicine and currently they are becoming fashionable throughout the developed universe, for the regimen of both flora and fauna. Biodiversity can be expressed in form forms; genetic diversity, species diversity and ecosystem diversity. The animal genetic resource occupies a vital place in ecological biodiversity. Odisha with its diversified customs and traditions innate from past times is dense with various rivers and dense forests that contribute an important sector for the development of several domestic and poultry species with huge diversity. Animal husbandry has been an intrinsic factor of the rustic livelihood system in the state. As domestic animals form an integral part of the farming system, their treatment and care form the primary importance for the farmers. Most of the animal raisers depend on flora-based traditional medicines for the remedy of domestic animal disorders, referred to as Ethnoveterinary Medicine (EVM). The current review paper illumines the knowledge of Ethnoveterinary practices of tribes in Odisha, India.

**Keywords:** biodiversity, ethnoveterinary medicine (evm), husbandry, medicines, traditional, tribes

### Introduction

Ethnoveterinary medicine (EVM) accommodates with individual's proficiency, skills, procedures, implementations, applications and beliefs about the treatment of their livestock [1]. Ethno veterinary operations concerned with the livestock healthcare is a hundred years old practice stated back to settlement of different domestic species [2]. In the way of evolution, the ethno veterinary practice has come to spotlight as a substitute inexpensive solution to conventional medicines and currently practiced by the rural farmers as a vital part [3]. Furthermore, ethno veterinary medicines can be a major replacement to antibiotics used to aid the growth in animals and to perform the production procedure of livestock as well as for symptomatic treatment of common domestic ailments [4]. Being cost effective on one side and easily available on the other side, livestock raisers mainly opt for the ethno veterinary practices (EVP) for classifying, diagnosing, preventing, caring and treating common animal ailments [5]. The unavailability of sufficient allopathic conventional medical management system forces rural communities throughout the globe to depend on the traditional medicines for the human as well as veterinary health care [6]. Moreover, with the day-to-day research, the modern medicines are becoming less significant in remedy of veterinary diseases; it is becoming much significant to research more on traditional wealth of ethno veterinary practices [7]. Upland farming system, which is devoid of any mechanization, is the cornerstone of most of the tribes of Odisha [8]. For the design of strip ploughing and contour farming and threshing of rice-paddy, farmers gathered the domesticated cattle [9]. Milk and meat production are the two main generations that are linked with the livestock rearing. Especially, goat nurturing has become a sector of practice of

green forest that is called as a factor of utilization of ecological system for economy or 'ecotechnology' [10].

Bruises, Blisters, Lumps, Boils and Swelling skin are the ones associated with the domestic animals. Myiasis is a disorder in livestock farms and leads to serious economic reduction through several factors which include bad quality, reduction in body weight, loss of fertility and less creation of milk. Infections and allergies even lead to death of livestock. Due to the constrict resource, the livestock raisers of rural areas depend on government veterinary medical center, rather opt to the traditional herbal care for their animal's treatment [11].

An eastern Indian state, Odisha, contributes to approximately three percent of national's population, nearly five percent of land area, eight percent of aquatic resource, seven percent of land resource. Out of the 155710 sq. km of state's land area, thirty-seven percent accounts for forest, thirty-five percent for cultivation and nearly eight percent for non agricultural use [12]. Being an agricultural state, livestock contributes to an important sector of agriculture, contributing to about forty-five percentage of the complete value of agricultural manufacture and acting as a support system for the livelihood of major share of the state population [13]. As a dense forest state, Odisha has several opportunities to sue variety of plants and plant products against the animal ailments. The plant species belonging to the families Acanthaceaea, Arecaceace, Asteraceae, Brassicaceae, Cucurbitaceae, Euphorbiaceae, Fabaceae, Loganiaceae, Malvaceae, Meliaceae, Poaceae, Rutaceae, Solanaceae plays vital role in therapy and surgery of livestock ailments [14].

### Ethno veterinary practice: an alternative treatment approach

Odisha being a backward state, where closely eighty percent of the individuals are below poverty line, mainly depend on agriculture and livestock for their livelihood. Animal rearing is opted as a major task to satisfy the unmet needs of the poverty people and open the door for income [15]. Being financially unstable, they depend on some inexpensive method of animal care. The practice of ethno veterinary medicine, being cost effective and dynamic, provides the best solution and with less side effect it can be applied to any domestic of any age group. This way is found to be more effective to reduce the need of multidrug resistant pathogens or superbugs and can lead to reduction of antibiotic percentage in animal origin food like milk, meat and egg. The materials and compounds and substances present in ethno veterinary medicine, can be readily available and easy to prepare too [16].

### Ethno veterinary practice

Elements added merit to conflict drug defiance and have less side harmful effects on health as well as ecosystem than allopathy medicine has a significant effect on the development of this traditional wisdom. Traditional relieving practices involve 3 most chief elements:

- Implementation of natural products
- Approach to natural forces
- Manipulation and surgery

Indigenous products utilized are medicinal plants and its products, parts and products of fauna and several different components [17].

### Medicinal plants and byproducts

Flora contains most common and readily available source of components used in manufacture of ethnomedicine. All plant parts from root to stem bark to leaves, fruits to flowers and seeds are used in preparation. The primary and secondary metabolites produced by plant parts like terpenoids, phenolics, sulphur and nitrogen compounds, several organic and inorganic substances, amino acids etc involves the chief principle of treatment [18,19].

### Edible earth and minerals

Isoptera and Formicidae hills set out to be habitual source of edible earth utilized in Ethnoveterinary medicine preparation.

### Animal Parts and Products

Animal outcomes like milk, meat, egg, butter, fauna byproducts like bone, skin and animal wastes like urine and faecal matter like dung aids in the preparation of ethnoveterinary medicine. Honey and vegetables oil are used in healing process [20].

### Use of ethnoveterinary medicines against several animal ailments [21-25]

#### Deworming

A process to kill the worms, which may be intestinal or parasitic

1. Preparation of fermented product (alcohol) from Mahua (*Madhuca indica* J.F. Gmel) seeds and applied to disordered animals to get rid of endoparasites. Being antiseptic and laxative in nature, Mahua seeds help in removal of endoparasites from body.

2. Amalgamation of crushed leaves and fruits of custard apple (*Annona squamosa* L.) act as an alternative solution for deworming.
3. In some other parts, leaves of Neem (*Azadirachta indica* A. Juss) mixed with jiggery or wheat flour too used as a source of ethno veterinary medicine. Neem leaves having the property of anthelmintic and antiseptic, contribute to deworming in cattle.
4. Due to carminative, anthelmintic and disinfectant property of fruits and seeds of Timru (*Zanthoxylum armatum* DC), traditional healers employed the same for endoparasite removal.

### Foot and mouth disease

Hoof or Mouth disease is a highly contagious infection, caused by virus:

1. Livestock raisers prepare a mixture by adding Haldi (*Curcuma longa* L.), common salt and Soyabean (*Glycine max* (L.) Merr) oil and applied to the affected areas of tongue and hooves. Haldi prevents swelling and works as an antibiotic to prevent bacterial infection in wounds.
2. Some others used the mixture of Haldi and Linseed (*Linum usitatissimum* L.) oil and applied the same on ulcers of foot and mouth disease.
3. Even the desi ghee applied on tongue and hooves of foot and mouth disease of disordered animals, found to get relief from pain and germicidal property prevent bacterial infection.

### Tympany

Also known as Ruminant tympany or bloat refers to accumulation of excessive volume of gas in the rumen of cattle:

1. Combination of juice extracted from leaves and stem of Giloy (*Tinospora cordiflora* (Willd.) Miers ex Hook.f & Thoms) plant, haldi powder, grounded black salt, crushed Ajwain (*Trachyspermum ammi* (L.) Sprague) and crushed Hing (*Ferula assafoetida* L.) along with Mustard (*Brassica campestris* L.) oil act as a source of ethno veterinary medicine.
2. Ginger, Haldi and Hing powder having the potentiality to control gas formation used as a medicine against tympany.
3. The fruits of Tumba are given to diseased animals to cure stomachache and increase milk production.

### Diarrhea: A viral bowel infection

1. Boiled rice mixed with sour chaach (whey) is supplemented to the animals.
2. Juice of fruits and barks of Kumbha (*Careya arborea* Roxb.) being astringent and demulcent in composition, found to be effective against diarrhea.
3. Crushed roots of date palm (*Phoenix dactylifera* L.) are another source of ethno veterinary medicine for diarrhea.

### Mastitis

A bacterial infection causing visibly abnormal milk:

1. Paste of Dhatura (*Datura stramonium* L.) leaves found to be effective, which reduces swelling and prevent inflammation.

### Haemorrhagic septicaemia: Contagious bacterial disease:

1. Combination of haldi powder along with common salt prevents the disease.

**Pneumonia: A respiratory disease**

1. Paste prepared from haldi powder and crushed hing along with sweet oil acts as a guide for the treatment of pneumonia.

**Lantana poisoning: A hepatotoxic disease by ingestion of *Lantana camara* L.**

1. Mixture of jaggery and sweet oil applied to affected portion give relief from pain. Jaggery gives warmth and strength to animal body and sweet oil helps to prevent assumption of poison in body.

**Table 1:** Ethnomedicinal information for animals

Local Name	Botanical Name	Family	Used Part	Ailment	Modalities of Use
Khaira	<i>Acacia catechu</i> (L.) Willd. Oliv.	Fabaceae	Wood	Wound	Crushed wood mixed with Vaseline and applied
Bela	<i>Aegle marmelos</i> L.	Rutaceae	Fruit	Fever	Ripened fruit pulp
Piaja	<i>Allium cepa</i> L.	Amaryllidaceae	Bulb	Cold and cough	Mixture of bulb paste and mustard oil
Ata	<i>Annona squamosa</i> L.	Annonaceae	Leaves, Fruits	Deworming	Mixture of crushed leaves and stem
Neema	<i>Azadirachta indica</i> A. Juss	Meliaceae	Leaf, Fruit	Diarrhoea, Fever, Deworming	Amalgamation of leaf paste and turmeric powder
Sorisa	<i>Brassica campestris</i> L.	Brassicaceae	Seed	Tympany	Mustard oil mixed with leaves and stem of Giloy
Haladi	<i>Curcuma longa</i> L.	Zingiberaceae	Rhizome	Deworming, dysentery, foot and mouth disease	Haldi powder mixed with common salt and soyabean oil
Dudura	<i>Datura stramonium</i> L.	Solanaceae	Fruits, Leaves	Mastitis	Paste of leaves applied to the affected area
Mahula	<i>Madhuca longifolia</i> (J. konig) J.F. Macbr	Sapotaceae	Seeds	Deworming	Paste of seeds
Timru	<i>Zanthoxylum armatum</i> L.	Rutaceae	Fruits, Seeds	Deworming, Dysentery	Paste of leaves and seeds

**Challenges faced by ethno veterinary practices in present arena**

In current status, with the expansion of population, the forest area is reducing. The period is moving towards readily accessible drugs. Also the youngsters of the state show less attention towards this traditional practice. Day-by-day, state is losing the experienced individuals as a result of which there is no assistance to carry this rustic knowledge to next generation. No one has the eye to protect this practice. So, it is tailing off in the era of western medicine. The emergence of contemporary practice also making it confusion for the youth generations to follow the belief and practices of their ancestors. In spite of present attempt to encourage the utilization of ethno veterinary practices worldwide, much statistics is only enlightened in field reports and research publications [26].

**Ethno veterinary practices: limitations**

Even though there is much development, it cannot be accessed in urgent situation as assemblage of ingredients becomes a major barrier. Some therapies are not suitable to make and use. Experience is the major factor in such practices as amount of ingredients to be added to make the preparation plays the vital role. The detection of diseases is based on symptoms and signs, rather than cause of disorder. The major demerit is it shows slow action and can't face the epidemic and endemic infectious diseases. Several medicinal plants are used, some of which may be poisonous like *Atropa belladonna* which may harm the livestock, it not given in right amount [27].

**Conclusion**

The current review paper discloses that ethno veterinary practices by tribes are a vital part of rich traditions of livestock care and treatment. Although these traditions are followed since time long past however they are diminishing at a very higher rate with the passage of period and increasing civilization. Day by day tribal is found to be highly knowledgeable in caring their animals through aboriginal practices and majority of the individual seek advice from village traditional healers than the veterinary doctors. It clearly signifies that they had large skill of ethno-knowledge for animal medico care. This practice is passed

from ancestors to younger generations through verbal transmission. Therefore, there is crucial requirement of an exhaustive discussion and documentation of indigenous knowledge for treating animal ailments and disorders in tribe dominant areas.

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