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## Ethnoveterinary practices using cucurbit crops: a case study in Sundarban, West Bengal, India

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### Abstract

A field survey was carried out during 2018–2023 and collected the ethnoveterinary practices using cucurbit crops by tribal and local communities in Sundarban, West Bengal. The gathered information, including the reports of other researchers, is presented here. The present study highlights the importance of cucurbits in medicinal aspects and the sound knowledge of tribal communities in the study areas.

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### INTRODUCTION

The intertwining of humans, plants, and animals has been an enduring hallmark of traditional practices across diverse cultures (Wanzala et al. 2015). Among the various plant species that have played a multifaceted role in the holistic well-being of communities, cucurbit crops stand out as a significant group. These cucurbitaceous plants, which include pumpkins, squash, cucumbers, and melons, have not only been instrumental in human nutrition and

traditional medicine but have also been harnessed for the care and health of animals. Ethnoveterinary medicine, a domain firmly rooted in indigenous knowledge systems, offers a window into the rich heritage of using cucurbit crops as remedies for various animal health concerns. This ethnoveterinary relationship represents a harmonious coexistence between traditional wisdom and the well-being of livestock and working animals. Cucurbit crops have found their place in the annals of ethnoveterinary practices due to their diverse properties and applications. These practices are deeply intertwined with the cultural fabric of societies and have been transmitted through generations. Traditional healers, farmers, and local communities hold this knowledge, offering practical and sustainable solutions to address a wide range of animal health issues. These plants are typically grown locally and are readily available to farmers and traditional healers. Their affordability and proximity make them an attractive option for animal care, especially in resource-limited settings. Nonetheless, the preservation and documentation of ethnoveterinary knowledge face challenges in an evolving world. Keeping the importance of cucurbit crops, a survey was made during 2018-2023 in Sundarban, West Bengal to collect the information on ethnoveterinary uses of cucurbit crops. Present study highlights the knowledge on ethnoveterinary of tribal communities in study areas.

### METHODOLOGY

A survey was carried out in 16 blocks of four subdivisions (Diamond Harbour, Canning, Kakdwip and Baruipur) of Sundarban, West Bengal during 2018-2023 (Figure 1). The information on ethnoveterinary uses of cucurbit crops (*Trichosanthes cucumerina*, *Momordica charantia*, *Coccinia grandis*, *Lagenaria siceraria*, *Cucurbita pepo*, *Benincasa hispida* and *Cucumis sativus*) were collected from tribal and local communities (Poundra, Bagdi, Rajbongshi, Tior, Duley etc.) using standard method (Kumar and Jena 2017).



**Figure 1:** Collection of information on *Coccinia grandis* from Kabiraj Laxmi Rani Sardar (Poundra Community) from study areas

## RESULTS AND DISCUSSION

The collected information was categorized by the disease and disorders and presented here.

### Digestive problems

The pulp or extracts derived from cucurbit fruits or leaves (*Benincasa hispida*) are administered to animals to ease stomach discomfort, indigestion, and diarrhoea.

### Wound healing

The fruit pulp of all selected cucurbit crops are used to cure wound in cattle.

### Dehydration and heat stress

Cucumbers and melons are given to the cattle during summer season. Cucumbers are known for their cooling properties and can be a refreshing and effective solution to keep animals well-hydrated during scorching conditions.

### Nutritional supplementation

Cucurbit crops are not only appreciated for their medicinal properties but also for their role in providing essential nutrition to animals. Selected cucurbits are often included in animal diets to supplement nutrition and promote overall health. The fruit of *Benincasa hispida* mixed with phoenix sugar and given to pregnant cow for providing essential nutrient (Figure 2).

### Insect repellent

When animals are exposed to external parasites like ticks or fleas, leaves of all selected cucurbits are used to deter these insects.

### Swelling and inflammation reduction

Ingestion of *Benincasa hispida* fruits provide relief to animals suffering from injuries, swelling, or inflammation, aiding in a quicker recovery process.

### Udder health in dairy animals

In some traditional livestock-keeping communities of study areas, cucurbit crops (*Trichosanthes cucumerina*, *Momordica charantia*, *Coccinia grandis*, *Lagenaria siceraria*, *Cucurbita pepo*, *Benincasa hispida* and *Cucumis sativus*) are used to promote udder health in dairy animals. Applying cucurbit-based remedies to the udders of cows or goats is believed to prevent infections and maintain the quality of milk production. This practice is crucial in ensuring the well-being of dairy animals and the quality of dairy products.

### Respiratory ailments

Roots of *Trichosanthes cucumerina* and *Benincasa hispida* is used in the form of oral administration or as fumigants.



**Figure 2:** Collection of information on *Benincasa hispida* from study areas

### **Parasitic infections**

*Luffa* species is included in animal diets, are believed to help in preventing and managing parasitic infections.

### **Deworming**

Leaves of *Coccinia grandis* is used as deworming agent by the Poundra community of study areas (Figure 1).

### **Reducing fever**

In certain traditional practices of study areas, selected cucurbit crops are believed to have cooling properties. Slices or extracts from these crops are provided to animals to help reduce fever or heat-related ailments.

### **Gastrointestinal upsets**

Selected cucurbit crops are often used to alleviate various gastrointestinal upsets in animals, including nausea, bloating, and constipation. The natural properties of these plants can help soothe the digestive system and restore normal functioning, making them valuable for maintaining digestive health.

Some other researchers have also documented the ethnoveterinary practices. Tuber of *Cucumis ficifolius* is employed in the treatment of conditions like blackleg, colic, and emaciation in animals such as cows and bovines (Tamiru et al. 2013). The leaves of *Cucurbita pepo*, also known as Field pumpkin, find utility in the treatment of trypanosomiasis in animals. Meanwhile, the leaves and seeds of *Lagenaria siceraria*, or Bottle gourd, are used to combat rabies and trypanosomosis. *Momordica foetida*, commonly referred to as Wild cucumber, serves multiple roles in the management of ailments including fractures, rabies, trypanosomosis, myiasis, lice, and certain ectoparasite infestations (Sori et al. 2004). It's also effective in addressing Babesiosis and Anaplasmosis in sheep, goats, and cattle (Eshetu et al. 2015), and it possesses sedative properties for animals. The root decoction of *Citrullus colocynthis*, known as Bitter apple, is administered to animals to alleviate constipation, and is used during the birthing process (Galav et al. 2013). Furthermore, the application of *Citrullus colocynthis* juice has been reported in the treatment of skin infections in buffalo, cows, and goats (Tariq et al. 2014). In a different study, Reang and colleagues documented the use of a mixture of animal feed combined with *Luffa acutangula*, or Ridge gourd, to improve issues related to indigestion and constipation in animals (Reang et al. 2016).

Additionally, certain cucurbitaceous plants from the Eastern Ghat, such as *Corallocarpus epigaeus* (leaves) and *Kedrostis rostrata* (roots), have been found effective in managing enteritis in animals (Usha et al. 2015). The seeds of *Cucurbita maxima*, or Pumpkin, have proven highly beneficial in controlling worm-related infections in animals (Rajkumari et al. 2014). Other species within the Cucurbitaceae family, including *Luffa*, *Cucurbita*, and *Cucumis*, are commonly integrated as complementary dietary ingredients in poultry feed and increasingly serve as protein and vitamin supplements in aqua feeds. These plants, like those from the *Momordica* and *Cucurbita* genera, are also used as remedies for livestock (Ajuru and Nmom 2017). In this way, the Cucurbitaceae family plays a significant role in providing nutrition, therapeutic benefits, and food security to livestock.

### CHALLENGES AND FUTURE PROSPECTS

Even while cucurbit-based ethnoveterinary methods are clearly accessible and sustainable, there are still issues. To guarantee that these traditions remain relevant, traditional knowledge must be preserved and documented. To fill this gap, researchers and indigenous knowledge bearers must work together. Combining conventional knowledge with contemporary veterinary procedures has a bright future.

By working together, we can improve animal healthcare while honouring regional customs and the natural balance of the environment. In summary, cucurbit crops' accessibility and sustainability for ethnoveterinary applications reflect the harmonious coexistence of people, plants, and animals. These methods have flourished over many generations, providing long-term and reasonably priced solutions for the health and welfare of livestock. They serve as evidence of the close connection that exists between the wellbeing of livestock, culture, and the natural world. The current task is to protect and incorporate this priceless knowledge into modern veterinary medicine.

## CONCLUSION

The present research focuses on the traditional healing practices used by the tribal people of West Bengal's Sundarban region. The study also emphasizes how traditional methods of treating cattle might benefit from the usage of cultivated cucurbits, which not only offer food and a means of subsistence. Additional experimental work is required to support and enhance the assertions.

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