

# BEYOND ANTIBIOTICS: VALIDATING ETHNO-VETERINARY PRACTICES AS A HOLISTIC SHIELD FOR PUBLIC HEALTH AND SUSTAINABLE ANIMAL HUSBANDRY

Kaiyad B. B.<sup>1</sup>, Patel J. B.<sup>2</sup>, Sutaria P. T.<sup>3</sup>, Suthar D. N.<sup>3</sup>, Vyas A. V.<sup>4</sup>, Patel J. P.<sup>1</sup>, Gangurde A. A.<sup>1</sup>

<sup>1</sup>M.V.Sc. Scholar, <sup>2</sup>Assistant Professor, <sup>3</sup>Associate Professor, <sup>4</sup>Senior Research Assistant  
Department of Veterinary Surgery and Radiology, College of Veterinary Science and  
Animal Husbandry, Kamdhenu University, Sardarkrushinagar.

DOI: <https://doi.org/10.5281/zenodo.19970890>

## Abstract

Ethnoveterinary medicine (EVM) represents a valuable indigenous system that supports sustainable animal health management through locally available, plant-based remedies. In modern livestock production, excessive antibiotic use has contributed to the growing challenge of antimicrobial resistance (AMR). This not only threatens animal treatment outcomes but also poses serious risks to human health. EVM provides effective alternatives for managing common diseases like mastitis, enteritis and reproductive disorders. By reducing antibiotic dependency, it helps improve the overall health and productivity of livestock. Importantly, EVM contributes to food safety by minimizing harmful drug residues in milk and meat. Residue-free animal products are essential for protecting consumer health and maintaining quality standards. The approach also encourages environmentally friendly practices and conservation of medicinal plant resources. These benefits align with the principles of the One Health framework. Thus, integrating EVM with modern veterinary care offers a holistic pathway linking animal health, food safety and public health sustainability.

- **Keywords:** Antibiotic alternatives, antimicrobial resistance (AMR), Ethnoveterinary medicine (EVM), Livestock health, public health, Traditional knowledge

## Introduction

The application of traditional medicine to veterinary medicine has been termed as ethnoveterinary medicine (EVM) which are a mode of identifying, use and integration of the local knowledge, related skills and custom procedures created by people for purpose of preserving health and welfare of working and productive animals (Menegesha, 2020). EVM is very dynamic and multifunctional since it can cure a variety of livestock illnesses as well as being widely available in remote areas and less expensive than synthetic medicines (Rahman *et al.*, 2023). Antimicrobial resistance (AMR) in livestock is a growing global concern that threatens both human and animal health. The overuse and misuse of antibiotics in livestock production have led to an increased propensity for the development of AMR. To decrease livestock antibiotic resistance, focus on reducing antibiotic use and implementing alternative approaches to disease prevention and treatment (Enshaie *et al.*, 2025). By championing these sustainable, alternative treatments, we directly embody the World Veterinary Day 2026 theme: "Veterinarians: Guardians of Food and Health." The integration of EVM practices presents a viable strategy for reducing the overreliance on antibiotics. These traditional methods not only support growth and productivity in livestock but also offer effective solutions for the prevention and treatment of common animal diseases

(Shridhar, 2024). The University of Trans-Disciplinary Health Sciences and Technology, along with the National Dairy Development Board (NDDB), India, has been promoting validated, cost-effective, and efficacious ethno-veterinary medicine (EVM) as an alternative approach since 2017 to rationalize the use of antibiotics and other veterinary drugs for managing several common ailments in bovines (Nair et al., 2025).

**Ethnoveterinary Medicine (EVM)**

EVM is the knowledge developed by rural livestock owners. Both are dynamic and in constant flux. Also, it is cost-effective. Farmers develop ethno-veterinary medicine in the field and barns rather than in scientific laboratories. Orally, ethno-veterinary practices pass from one generation to the next generation (Meena et al., 2024). EVM comprises of traditional surgical techniques, traditional immunization, magico-religious practices, and the use of herbal medicines to treat livestock diseases. It provides traditional medicines, which are locally available and usually cheaper than standard treatments. Livestock holders can prepare and use homemade remedies with minimum expense (Menegsha, 2020). At present over 35,000 plants are known to have healing properties in the world (Maine, 2009).

There are various methods to prepare ethno veterinary medicine by using medicinal plant and their parts like leaves, woods, barks etc. (McCorkle and Mathias, 1992). Different

types of methods for preparing the medicine are boiling, soaking, pounding, pelleting, paste formation and juice preparation (Meena et al., 2024)

**The Science Behind the Tradition: Beyond "Folk Remedies"**



*Figure : Application of an ethno-veterinary herbal paste for mastitis management, alongside key medicinal plants utilized in traditional formulations. (Source: NDDB, 2021)*

Empirical data from over 10,60,000 cases treated for 34 disease conditions using EVM alone show an overall recovery rate of above 80%. The intervention impact study indicates an 87.78% reduction in antibiotic residue in milk and reduced incidence of mastitis (83.3%), enteritis (63.6%) and repeat breeding (96%) from 2016 to 2019. (Nair et al., 2025)

**Validated Ethno-Veterinary Formulations for Common Bovine Ailments**

Ailment / Condition	Route of Administration	Ethno-Veterinary Formulation (Key Ingredients) (NDDB, 2021)	Primary Compounds & Active Rationale (Wynn & Fougère, 2007)
Mastitis Management	Topical Paste	<i>Aloe vera</i> (Ghrit Kumari), <i>Curcuma longa</i> (Turmeric), Calcium hydroxide (Lime), <i>Citrus limon</i> (Lemon).	Curcumin (potent anti-inflammatory), Acemannan (tissue regeneration), and an alkaline shift via lime to inhibit pathogens.
FMD Mouth Lesions	Topical Paste	<i>Cuminum cyminum</i> (Cumin), <i>Piper nigrum</i> (Black Pepper), <i>Allium sativum</i> (Garlic), <i>Trigonella foenum-graecum</i> (Fenugreek), <i>Curcuma longa</i> (Turmeric), <i>Cocos nucifera</i> (Coconut), Jaggery.	Allicin (broad-spectrum antimicrobial) and Piperine (enhances bioavailability of curcumin for rapid mucosal healing).

<b>Repeat Breeding</b>	Oral Administration (Fresh form)	<i>Raphanus sativus</i> (Radish), <i>Aloe vera</i> ( <i>Aloe vera</i> ), <i>Cissus quadrangularis</i> ( <i>Cissus</i> ), <i>Murraya koenigii</i> ( <i>Curry leaves</i> ), <i>Moringa oleifera</i> ( <i>Moringa</i> ), <i>Curcuma longa</i> ( <i>Turmeric Powder</i> ), Jaggery, Salt.	Phytoestrogens and rich micronutrients (calcium/phosphorus) that restore uterine tone and hormonal balance.
<b>Enteritis / Diarrhoea</b>	Oral Administration (Mixture)	<i>Trigonella foenum-graecum</i> ( <i>Fenugreek</i> ), <i>Piper nigrum</i> ( <i>Black Pepper</i> ), <i>Allium cepa</i> ( <i>Onion</i> ), <i>Cuminum cyminum</i> ( <i>Cumin</i> ), <i>Curcuma longa</i> ( <i>Turmeric Powder</i> ), <i>Papaver somniferum</i> ( <i>Poppy seeds</i> ), <i>Allium sativum</i> ( <i>Garlic</i> ), <i>Murraya koenigii</i> ( <i>Curry leaves</i> ), <i>Ferula asafoetida</i> ( <i>Asafoetida/Hing</i> ), Jaggery.	Flavonoids and Resins that act as gut astringents and antispasmodics, balancing intestinal flora without killing beneficial microbes.
<b>Bloat and Indigestion</b>	Oral Administration (Paste)	<i>Allium cepa</i> ( <i>Onion</i> ), <i>Piper nigrum</i> ( <i>Black Pepper</i> ), <i>Allium sativum</i> ( <i>Garlic</i> ), <i>Piper betle</i> ( <i>Betel leaves</i> ), <i>Capsicum annuum</i> ( <i>Chilly</i> ), <i>Curcuma longa</i> ( <i>Turmeric Powder</i> ), <i>Zingiber officinale</i> ( <i>Ginger</i> ), <i>Cuminum cyminum</i> ( <i>Cumin</i> ), Jaggery, Salt.	Gingerol (prokinetic agent) and volatile essential oils that act as powerful carminatives to expel trapped ruminal gases.

Traditional ethnoveterinary medicine (EVM) is widely used to treat conditions such as anoestrus, pox, hygroma, udder oedema, retention of placenta, prolapse, fever, parasitic infections, poisoning, and many other conditions. (NDDDB, 2021)

**Documentation of ITK: The 'Field' Reality"**

Dr. N. Punniyamurthy, a retired professor from TANUVAS, was awarded the Padma Shri 2026 for his pioneering work in integrating traditional animal healthcare with modern veterinary science. He spearheaded the scientific validation of traditional ethnoveterinary formulations passed down by farming communities. By providing evidence-based herbal treatments for common ailments like mastitis and foot-and-mouth disease, his work offers credible, antibiotic-free alternatives in an era grappling with antimicrobial resistance. Through extensive field demonstrations and capacity-building, he transferred this knowledge to thousands of veterinarians and farmers. Ultimately, his strong advocacy for antibiotic stewardship has helped bring ethnoveterinary medicine from the fringes into mainstream Indian dairy policy (Dairy Dimension, 2026).

**Sustainability and Public Health Implications**

EVM serves as a "holistic shield" by addressing the limitations of modern veterinary infrastructure and the rising threat of antimicrobial resistance.

**Economic Sustainability:** EVM is often the only available or affordable means for farmers in remote areas to treat livestock (Rahman, 2023).

**Public Health:** By providing plant-based alternatives for conditions like worms, diarrhoea, and skin diseases, EVM can reduce the over-reliance on antibiotics in the food chain. (Meena, 2024). This residue-free approach is how modern practitioners fulfil their mandate as true Guardians of Food and Health, ensuring safety from farm to fork.

**Biodiversity Conservation:** EVM encourages the protection of local flora, as healers rely on diverse ecosystems for their pharmacopeia (Menegesha, 2020)

**Challenges and Future Directions**

Despite its potential, EVM faces significant threats that must be addressed to ensure its continued utility. Traditional knowledge is largely oral and is disappearing

as elderly healers pass away without younger generations adopting the practices (Rahman, 2023). The lack of scientific proof of its efficacy and lack of precise dosage, which could lead to toxicity, are other disadvantages of traditional medicine (Oyda, 2017).

### Conclusion

Ethnoveterinary medicine (EVM) strengthens animal health by providing effective, natural alternatives for managing common livestock diseases. It reduces dependence on antibiotics, thereby lowering the risk of antimicrobial resistance. EVM

ensures safer animal products by minimizing drug residues in milk and meat, improving food safety. Its use supports sustainable livestock production and enhances farmer livelihoods. By relying on medicinal plants it also promotes biodiversity conservation and environmental health. EVM aligns with the One Health approach by linking animal, human and ecosystem health. Thus, integrating EVM with modern practices offers a holistic and sustainable future for animal healthcare and public health.

### References

- Dairy Dimension. (2026, January 25). *Padma Shri 2026: Prof. N. Punniyamurthy honoured for championing ethnoveterinary medicine in India*. [Read article](#)
- Enshaie, E., Nigam, S., Patel, S., & Rai, V. (2025). Livestock antibiotics use and antimicrobial resistance. *Antibiotics*, 14(6), 621. <https://doi.org/10.3390/antibiotics14060621>
- McCorkle CM and Mathias-Mundy E, (1992). Ethno-veterinary Medicine in Africa. *Africa*, 62(1): 59-93.
- Meena, D. C., Chadda, A., Priyanka, B. N., & Kant, A. (2024). Ethno-veterinary practices used for animal health care management: A review. *Indian Journal of Animal Health*, 63(1), 1–9. <https://doi.org/10.36062/ijah.2023.17422>
- Meneghesha, A. (2020). A review on ethno-veterinary medicine practices and indigenous knowledge. *Journal of Veterinary Medicine and Animal Sciences*, 3(1), 1029.
- Nair, B. M. N., Harikumar, A. V., & Punniyamurthy, N. (2025). *Ethno-veterinary science and practice as an alternative approach to antibiotics and other chemical veterinary drugs in veterinary care*. In K. R. Petrovski (Ed.), *Bovine medicine: Education and practice*. IntechOpen. <https://doi.org/10.5772/intechopen.1012535>
- National Dairy Development Board. (2021, July). Ethnoveterinary formulations for important ailments in bovines. National Dairy Development Board. [www.nddb.coop](http://www.nddb.coop)
- Oyda, S. (2017). Review on traditional ethno-veterinary medicine and medicinal plants used by indigenous people in Ethiopia: Practice and application system. *International Journal of Research - Granthaalayah*, 5(8), 109–119. <https://doi.org/10.29121/granthaalayah.v5.i8.2017.2193>
- Rahman, I. U., Ijaz, F., & Bussmann, R. W. (2023). Editorial: Ethnoveterinary practices in livestock: Animal production, healthcare, and livelihood development. *Frontiers in Veterinary Science*, 9, 1086311. <https://doi.org/10.3389/fvets.2022.1086311>
- Shridhar, N. B. (2024). Ethnoveterinary practice may be an alternative to antibiotics in dairy cattle. *International Journal of Environment, Agriculture and Biotechnology*, 9(5), 195–200. <https://doi.org/10.22161/ijeab>
- Wynn, S. G., & Fougère, B. J. (2007). *Veterinary Herbal Medicine*. Mosby Elsevier.

### Cite this article:

Kaiyad B. B., Patel J. B., Sutaria P. T., Suthar D. N., Vyas A. V., Patel J. P., Gangurde A. A. (2026). Beyond antibiotics: validating ethno-veterinary practices as a holistic shield for public health and sustainable animal husbandry. *Vet Farm Frontier*, 03(04), 24–27. <https://doi.org/10.5281/zenodo.19970890>