

Ethnoveterinary Practices in Dairy Industry

V. Monish^{*1}, G. Sujana¹**Introduction:**

Dairy farming plays an important role in rural livelihoods, and animal health directly affects milk production, reproduction, farm profitability and milk quality. Diseases such as mastitis, digestive disorders, parasitic infections, wounds and reproductive problems can cause considerable economic losses, particularly for small and marginal farmers.

Before modern veterinary medicines became widely available, livestock owners developed traditional methods of disease prevention and treatment using locally available plants, plant products, minerals and oils. This accumulated traditional knowledge is broadly known as **ethnoveterinary medicine (EVM)**. With increasing concerns about antimicrobial resistance, drug residues and sustainable livestock production, ethnoveterinary practices are receiving renewed scientific interest. However, traditional remedies need proper scientific validation, standardization and veterinary supervision before wider application.

Traditional Knowledge and Its Diversity

Ethnoveterinary practices vary considerably across India because of differences in climate, vegetation, livestock

systems and local traditions. Different parts of plants, including leaves, roots, bark, seeds, fruits and rhizomes, are traditionally used for conditions such as digestive disorders, wounds, skin problems, parasitic infections, reproductive disorders and udder diseases.

The diversity of this knowledge is illustrated by a study from Kathua, Jammu and Kashmir, which documented **72 plants used for 33 ailments of milk-yielding animals**.

However, a remedy traditionally used in one region cannot automatically be considered equally effective or safe elsewhere. Differences in plant species, preparation, concentration and dosage make scientific documentation and validation essential.

Importance in Dairy Production

Ethnoveterinary medicine may have economic and practical value for smallholder farmers because many traditional ingredients are locally available and inexpensive. It can be particularly useful where immediate access to veterinary services is limited.

Its potential importance has also increased because inappropriate antimicrobial use can contribute to **antimicrobial resistance (AMR)** and drug residues in animal products. Scientifically validated ethnoveterinary

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approaches could potentially reduce unnecessary antimicrobial use in selected conditions.

However, herbal remedies should not be regarded as replacements for antibiotics in every disease. Proper diagnosis is essential, and effective antimicrobial treatment should not be delayed when clinically indicated.

Applications in Common Dairy Animal Problems

Mastitis

Mastitis is one of the most economically important diseases of dairy cattle and buffaloes, affecting milk yield, milk quality and udder health. Because repeated antimicrobial use can contribute to resistance and concerns about residues, plant-based approaches have attracted research interest.

Plants such as **Aloe vera**, **turmeric** (*Curcuma longa*), **neem** (*Azadirachta indica*) and **Ocimum** species have been investigated for antimicrobial, anti-inflammatory and wound-healing properties.

Studies have evaluated polyherbal preparations containing turmeric, Aloe vera and other ingredients for subclinical mastitis and reported improvements in selected clinical or inflammatory parameters. Nevertheless, such findings should not be generalized to every traditional remedy. Mastitis treatment should be based on veterinary examination, disease severity and appropriate diagnosis.

Udder and Teat Health

Good udder hygiene is essential for producing safe and quality milk. Plant-based preparations have also been investigated as teat-care products. Herbal preparations containing Aloe vera and neem have shown potential effects on udder-health indicators in experimental studies.

However, herbal teat preparations must be evaluated for antimicrobial effectiveness, skin safety, stability and practical application before being recommended as alternatives to validated commercial products.

Digestive Disorders

Traditional livestock keepers have used various plant materials for indigestion, diarrhoea, bloat and poor appetite. Some plants contain compounds with potential digestive, antimicrobial or anti-inflammatory properties.

The major limitation is that apparently simple digestive problems may sometimes indicate serious conditions such as enteritis, ruminal acidosis, obstruction or poisoning. Therefore, traditional remedies should not delay veterinary diagnosis in severe or persistent cases.

Wounds and Parasitic Problems

Plant pastes, extracts and oils have traditionally been used for superficial wounds and skin lesions. Some medicinal plants contain compounds with antimicrobial and wound-healing properties. Nevertheless,

proper wound cleaning and prevention of contamination remain essential, while deep or infected wounds require veterinary attention.

Plant-derived preparations, particularly those based on neem and other medicinal plants, have also been investigated against ectoparasites and other parasites. Their effectiveness depends on plant species, active compounds, concentration, preparation method and target parasite. Scientifically validated plant-based products could potentially contribute to integrated parasite-control programmes.

Reproductive Problems

Traditional systems have also used herbal preparations for reproductive problems such as anoestrus. However, reproductive disorders may result from nutritional deficiencies, negative energy balance, uterine disease, ovarian dysfunction or management problems. Consequently, treatment should focus on identifying and correcting the underlying cause rather than relying solely on traditional preparations.

Milk Safety and Antimicrobial Resistance

Milk safety is an important consideration when treating lactating animals. Antimicrobial residues may occur when drugs are used without following appropriate withdrawal periods.

Validated ethnoveterinary approaches could potentially reduce antimicrobial use in

selected conditions. However, **“natural” does not automatically mean safe or residue-free.**

Plant-derived substances can also have biological effects, and their safety depends on dose, preparation, route and duration of administration. Therefore, herbal veterinary products intended for food-producing animals require appropriate safety and residue evaluation.

AMR is a major One Health concern involving animals, humans and the environment. Ethnoveterinary medicine may support antimicrobial stewardship when a scientifically validated traditional treatment can safely manage an appropriate non-severe condition without unnecessary antimicrobial use.

An important Indian example is the **National Dairy Development Board (NDDB)**-associated field programme, which reported an overall symptomatic recovery rate of approximately **81.5% among about 5.61 lakh clinical cases involving around 26 common ailments** after ethnoveterinary interventions. This represents field experience and should not be interpreted as an efficacy rate applicable to every traditional remedy. Individual treatments still require disease-specific validation.

Economic and Sustainable Importance

For smallholder farmers, locally available remedies may reduce expenditure for

selected minor or uncomplicated conditions. Early management may also help reduce production losses and unnecessary expenditure on medicines.

However, low cost alone does not establish economic benefit. A remedy that delays effective treatment may ultimately increase losses through reduced milk production, prolonged illness, infertility or mortality. Economic evaluation should therefore consider treatment success, recovery time, milk yield, recurrence, labour and animal welfare.

Ethnoveterinary knowledge also represents an important form of indigenous knowledge. Documenting and scientifically evaluating such practices can help preserve traditional knowledge while identifying potentially useful plant-based interventions.

Integration with Modern Veterinary Medicine

The future of ethnoveterinary medicine should not involve choosing between traditional and modern veterinary medicine. Instead, the emphasis should be on **evidence-based integration**.

Veterinarians should remain central to diagnosis, treatment selection and monitoring, particularly when infectious, severe or life-threatening diseases are suspected.

Future Prospects

Future research should focus on documenting traditional knowledge, identifying active phytochemicals, standardizing preparations and conducting controlled clinical trials. Priority areas may include mastitis, teat care, minor wounds, ectoparasite control and selected digestive disorders.

Dairy organizations can contribute by monitoring animal health, treatment practices and milk quality within organized milk-collection systems. Such programmes could help determine whether scientifically validated ethnoveterinary interventions can be practically and economically incorporated into dairy production.

Conclusion

Ethnoveterinary medicine represents a valuable reservoir of traditional knowledge developed through generations of livestock keeping. In dairy production, it has potential relevance to animal health, farm economics, milk safety, antimicrobial stewardship and sustainable farming.

Growing concerns regarding antimicrobial resistance and drug residues have increased interest in scientifically validated plant-based approaches. Evidence from Indian field programmes and selected clinical studies indicates potential benefits for certain common ailments, particularly udder-health problems.

However, traditional use alone does not establish efficacy or safety. The future of ethnoveterinary medicine should therefore follow a **“tradition supported by science”** approach—preserving indigenous knowledge while scientifically validating promising practices and integrating them appropriately with modern veterinary medicine.

Such an approach can contribute to healthier dairy animals, safer milk, responsible medicine use and more sustainable dairy production.

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