ETHNOVETERINARY PRACTICES IN INDIA: A REVIEW

Dilpreet Kaur, Kamal Jaiswal and Suman Mishra

Department of Applied Animal Science, Babasaheb Bhimrao Ambedkar University, Vidya Vihar, Raebareli Road Lucknow-226025, Uttar Pradesh, India.

*Author for correspondence: Dr. Suman Mishra
Assistant Professor, Department of Applied Animal Science, Babasaheb Bhimrao Ambedkar University, Vidya Vihar, Raebareli Road Lucknow-226025, Uttar Pradesh, India. Mail Id: drsumanmishra@gmail.com dp.zoology@gmail.com

ABSTRACT
Ethno veterinary practices involve the traditional beliefs, knowledge, practices and skills pertaining to healthcare and management of livestock. The Indian subcontinent has rich ethno veterinary healthcare traditions and practices that are the products of decades of experiences of local people. Presently this treasure of knowledge has confined only in rural India. In sub urban areas of India, livestock holders find an integrated approach with the use of modern medicines along with the ethnic practices and knowledge. The traditional knowledge of veterinary health care practices and drug preparations is handed down orally from generation to generation, therefore, it is less systematic and less formulized. The present paper deals with the status of herbal remedies for animal diseases in India and provides information on the botanical identity, specific preparations and mode of administration of the plant/plant’s part for treatment of various disorders of livestock. Various references in published articles, books/book chapters available in print as well as online that had recorded the use of ethno veterinary practices performed by rural people were searched out and analysed to obtain data.

KEYWORDS: ethno veterinary, veterinary health care practices, livestock diseases etc.
Pros & Cons of Ethnoveterinary medicine

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affordable</td>
<td>Some effective plants are seasonal. Not available throughout the year.</td>
</tr>
<tr>
<td>Effective</td>
<td>Late Recovery</td>
</tr>
<tr>
<td>Easily assessable</td>
<td>Cannot be preserved for longer duration</td>
</tr>
<tr>
<td>Less risk of developing resistance</td>
<td>Non-Standardized dose</td>
</tr>
<tr>
<td>User friendly</td>
<td></td>
</tr>
<tr>
<td>Eco friendly</td>
<td></td>
</tr>
</tbody>
</table>

Preparations of Ethno Veterinary Medicines (EVM)

Leaves

The leaf decoction of *Cuscuta chinensis*, *Mucuna pruriens* is given to cattle to increase lactation. The leaves of *Bambusa arundinacea*, *Saccharum* sp. are fed to animal to expel placenta after delivery. Leaf decoction or paste of *Croton bonplandianus*, *Cassia occidentalis* is given to animal to cure other birth related problems. Leaf paste of *Aegle marmelos*, *Cassia fistula*, *Musa paradisiaca*, *Tamarindus indicus* is mixed with ant hill soil or cow dung and applied externally to the back bone or femur bone or joints to treat Black quarter disease. Leaf paste of *Clerodendrum multilorum*, *Moringa oleifera*, *Ricinus communis*, *Vallaris solanaceae* is applied topically over fractured bone for early healing and relieve in pain. Leaves of *Adhatoda vasica*, *Bambusa arundinacea*, *Ficus religiosa*, *Justicia adhatoda*, *Vernonia cinerea*, *Clerodendrum multiflorum* are crushed and mixed with a little salt and given to animal to cure cough, cold or pneumonia. Leaf decoction, extract or just leaves of *Annona squamosa*, *Cassia fistula*, *Bryophyllum pinnatum*, *Holarrhena pubescens*, *Dolichandrone falcate*, *Cannabis sativa*, *Terminalia arjuna*, *Ricinus communis*, *Alsicarpus vulgaris*, *Tephrosia purpurea*, *Alysicarpus vaginalis*, *Talbergia sissou*, *Clerodendrum arundinaceae*, *Argemone mexicana*, *Anthocopus chinensis*, *Piper betle*, *Cardiospermum halicacabum*, *Cocculus hirsutus*, *Chenopodium album*, *Ficus racemosa*, *Psidium guajava*, *Bambusa arundinacea*, *Murraya koenigii*, *Vitex negundo* are fed to animals to cure diarrhoea, dysentery and other gastrointestinal disorders. Leaf extract of *Gymnsea sylvestre*, *Bauhinia variegata*, *Hyptis suaveolens*, *Ocimum tenuiflorum*, *Cissampelos pariera*, *Ficus benghalensis*, *Clematis heynei*, *Corchorus trilocularis*, *Leucas cephalotus* and latex of *Calotropis gigantea* is applied in the eyes of animals to cure various eye problems including cataract, redness in eyes, conjunctivitis. Leaf extract or decoction of *Adhatoda zeylanica*, *Andrographis paniculata*, *Barleria prionitis*, *Anisomeles indica*, *Boerhavia diffusa*, *Nyctanthes arbor-tristis*, *Murraya koenigii* is given to animal to cure high temperature, weakness and dullness. Leaves of *Abutilon indicum*, *Barleria prionites*, *Cassia obtusifolia*, *Lawsonia inermis*, *Nicotiana tabacum* are either fed or applied on hoofs of cattle to cure Foot Mouth disease. Leaf decoction or extract of *Cucurbita pepo*, *Cleistanthus colliniti*, *Albizia lebeck*, *Datura stramonium*, *Nicotiana tabacum*, *Haloptelea integrofolia* is applied on animal’s body to remove ectoparasites including ticks and lice. The leaves of *Azadirachta indica* mixed with jaggery or buttermilk is fed to animals to expel endo parasites. Leaf juice of *Allium cepa*, *Cryptolepis banchanii* is applied externally on site of insect bite. Leaf paste of *Adhatoda zeylanica*, *Amaranthus sp.*, *Annona squamosa*, *Eclipta prostrata*, *Cleome gynandra*, *Ipomoea carnea*, *Cucumis callosus*, *Acalypha indica*, *Crotalaria juncea*, *Dalbergia sissoo*, *Mucuna pruriens*, *Tephrosia purpura*, *Prunus persica*, *Sidha cordifolia* is applied on wound or burnt area of skin for healing. Leaves of *Juglans carpae*, *Saccharum sp.* are fed to animals to cure tympany. Leaves of *Trianthemia portulacastrum*, *Morus alba*, *Aloe vera* are crushed and mixed with a little salt and applied to the udder and teats as an ointment in mastitis.

Bark

The bark is most commonly used in the treatment of diarrhoea, dysentery and other gastrointestinal disorders of animals including flatulence, constipation, loose motion etc. Bark decoction/powder of *Acacia nilotica*, *Spondias mangifera*, *Ervatamia heyneana*, *Butea monosperma*, *Abelmoschus ficulneus*, *Syzygium cumini*, *Alstonia scholaris* and *Ficus religiosa* is given to the animal for some days to cure the disorder. Bark paste of *Bomax ceiba*, *Cordia gharaf*, *Litsea monopetala*, *L-glutinosus* and *Machilus macranthais* is applied on fractured bone and tied with a cloth to relieve the animal from pain. The bark paste of *Terminalia chebula*, *Garuga pinnata* is applied topically on wounds for healing. Bark decoction of *Syzygium caryophyllatum* and *Ficus glomerata* is also given in the treatment of tympany in animals.

Flower

Flowers of *Acacia nilotica*, *Calotropis gigantea* have been used as EVM for the treatment of gastrointestinal disorders. Flower of *Madhuca sp.* is used in bone fracture. Flowers of *Leucus aspera* are mixed with leaves of *Momordica sp.*, ragi powder and lemon juice is added and mixed with water and ground well and given twice a day orally to animal in fever. The inflorescence of *Musa sp.* is burnt into ashes, mixed with cow’s ghee & is applied externally to treat mastitis.

Fruits

Fruit juice, fruit pickle or dry fruits of *Cordia dichotoma*, *Luffa aegyptiaca*, *Citrus aurantifolia* and *Datura stramonium* is given to animal to cure cough, cold and pneumonia. Fruit paste or fruit powder of *Trigonella foenum gracum*, *Helicteres isora*, *Magnifera indica*, *Bombax ceiba*, *Cucurbita pepo*, *Aegle marmelos*, *Citrus aurantifolia* is given to animal to cure Diarrhoea, Constipation, Flatulence and Dysentery.
juice, extract or paste of Citrus limon, Lycopersicum esculentum, Solanum virginianum, Pyrus pashia is applied on eyes. Fruit of Coccinia grandii and Cucurbita maxima is also given in fever.[2],[14] Fruit decoction or powder of Terminalia chebula and Piper longum is applied on the affected area in Foot Mouth disease.[6],[7],[9],[10] Warmed tar-like oil extracted from the pericarp of the fruit of Semecarpus anacordium is applied on the hoof of the cattle suffering from FMD.[10],[12] Fruit of Ananas comosus is used to expel parasites in animals.[13] Fruit of Cassia occidentalis is given in poisonous bite.[2]

Roots

Root decoction or extract of Triumfetta pentandra is given to cattle after delivery to cure problems like lack of lactation, expulsion of placenta.[9] Roots of Asparagus racemosus are crushed and given to heal malformation of uterus.[10],[16] Root paste or decoction of Peucedanum nagapurensce, Abrus precatorius, Ficus bengalensis, Plumbago zeylanica, Cardiospermum halicacabum, Alternanthera sessilis, Curcuma domestica, Zingiber officinale is given to cure dysentery and other related problems.[7],[9],[11] Roots of Cayratia trifolia, Curcuma longa, are given to cure FMD.[5],[14] Root paste of Acorus calamus, Acalypha indica, Jatropha curcas is applied or given orally to expel parasites.[7],[10],[13] A rhizome of Colocasia esculenta is crushed to pulp and applied externally as antidote of the stings of scorpion, honey bee and wasp.[10] Roots of Butea monosperma are crushed and given to goats with fodder in tympany.[9],[10]

Seeds

The seeds of Amaranthus caudatus, Crotalaria juncea are fed to animals to treat problems related to poor lactation and uterus clearance.[6],[7] The seeds of Cuminum cyminum, Brassica campestris, Vigna radiate, Oryza sativa are known to heal in cold and cough.[6],[13] Seeds of Coriandrum sativum, Trachyspermum ammi, Jatropha podogrina, Ricinus communis, Cicer arietinum, Sorghum vulgare, Curcuma longa, Cuminum cyminum, Balanites aegyptiaca, Piper nigrum are given in gastrointestinal disorders.[6],[10],[13] Seed paste of Semecarpus anacordium is formed and given orally with butter during the treatment of FMD.[6],[10],[12] The seed paste of Annona squamosa is applied on body to remove ticks while the seed decoction of Terminalia bellirica, Butea monosperma, Balanites aegyptiaca is fed to expel endoparasites.[8],[13] Seed powder of Amaranthyes viridis, Cuminum cyminum and seed oil of Brassica campestris is given to cure tympany.[8],[10],[12]

CONCLUSION

Plants are the most commonly used ingredients in the preparation of ethnoveterinary medicines. The plants belonging to different families have property of healing and preventing various disorders in livestock, thus are important part of ethnic medicines. There are some families of the plants which have wide range of their usage by the health practitioners. Such families are Acanthaceae, Amaranthaceae, Apiaceae, Apocynaceae, Asclepiadaceae, Caesalpiniaeae, Cucurbitaceae, Euphorbiaceae, Fabaceae, Lilaciaeae, Mimosaceae, Moraceae, Poaceae, Rutaceae, Rubiaceae, Solanaceae and Zingiberaceae. The plants belonging to these families are used commonly in combination or alone for medicine preparation.

All parts of the plants, including leaves, bark, fruits, flowers, seeds, roots and oil are used in medicinal preparations. Edible earth especially from ant-hills and limestones are commonly used in the preparation of ethnoveterinary medicines.[1],[20] Animal/Plant products like milk, butter, butter milk, vegetable oil, honey, salt, jaggery and vaseline are also used for ethnoveterinary preparations for their healing and preservative properties.[20] The most common forms of ethnoveterinary preparations are leaves/bark/roots decoction, extract, powder, ointment, paste etc.

Ethnoveterinary medicines are often not as potent as modern allopathic medicines, therefore can be less suitable to control and treat epidemic and endemic infectious diseases (e.g., foot-and-mouth disease, rinderpest, haemorrhagic septicaemia, anthrax, blackquarter, rabies). But for common diseases and more chronic conditions such as cough, cold, skin diseases, worms, wounds, reproductive disorders, nutritional deficiencies, and mild diarrhoea, ethnoveterinary medicine can be a cheap and readily available alternative to costly drugs.

Many drugs used in modern medicines are based on chemical substances that are derived from plants. The search for herbal alternatives is important in present scenario as unnecessary use of antibiotics and other chemical drugs have caused residual problems and resistance development in microbes/parasites/insects to drugs or chemicals use to kill them. Therefore exploration of local, ethnic treatments should be done on large scale followed by validation of promising practices. The validation can be done at several levels like by asking the local people to rank their traditional treatments according to their apparent efficacy. By conducting laboratory tests, monitoring the use of remedies in the field.

A considerable progress has been made in the ethnoveterinary sciences due to recent explorations of ethno veterinary holism so as to bring the ancient culture of animal healing in light.[10] A number of plants, plant extracts and constituents have been identified as having antimicrobial, antiticks, pesticidal, pesticidal or antifungal activities and are often considered as immune enhancing.[21] Different studies have been made to understand various modes of action of these plant extracts and found that there are several ways by which they exert acaridical property, some of them are preventing blood feeding, molting, fecundity and hatching of ticks eggs.[22] The efficacy of herbal extracts
have also been reported for anthelmintic property.\textsuperscript{[23]}-\textsuperscript{[24]}

The scientific investigations should be conducted to ascertain the effectiveness of identified plant species in the treatment and control of diseases and parasites of livestock through discovery of new drugs.

A review on ethnoveterinary plants from Uttarakhand state of India reported that there are 364 plants used by people to treat animals as well as humans. The review also concludes that 26 plants out of 364 come under threatened flora.\textsuperscript{[25]} Therefore, it is important to focus on the conservation of valuable plants which could serve as a source of future herbal drugs. It is also a matter of discussion that in a present scenario due to rapid socio-economic development, the valuable knowledge of plants would get faded away, therefore it is important to document the practices and use of plants by tribal and rural people so that the knowledge could not get vanished away.

Competing interests

The authors declare that they have no competing interests.

Author’s contributions

Author Dilpreet Kaur collected and compiled the data obtained from various research papers/ books/ book chapters available online or print material. Author Kamal Jaiswal participated in design, coordination and helped to draft the manuscript. Author Suman Mishra designed, studied, analyzed, and concluded the manuscript. All the authors read and approved the final manuscript.

Acknowledgements

Author Dilpreet Kaur gratefully acknowledge Maulana Azad National Fellowship, from University Grant Commission in the form of Senior Research Fellowship for financial assistance.

REFERENCES