



TANUVAS TECHNICAL REPORTER

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ETHNO VETERINARY PRACTICES FOR THE HEALTH CARE OF LIVESTOCK

ETHNO VETERINARY PRACTICES

Relationship between plants and animals has been continuing from time immemorial and they have flourished together with the help and assistance of one another. Ethno veterinary medicine pertaining to animal health care is as old as the domestication of livestock. Mrigayurveda describes the association of the animals with plants for treatment. Ethno veterinary medicine has been used in day-to-day problems of healthcare in animals and traditional medicine is widely used in rural areas, where 70% of the country's population resides. Almost 75% of the medicinal plants grow naturally in different States of India and these plants are known to cure many ailments in animals.

Ethno veterinary practices are regarded as information gained over a period of time passed on from generation to generation. It is a community based functional knowledge system which was developed, preserved and refined by generations of people through continuous interaction, observation and experimentation with their surrounding environment. Globally, the resource poor rural farmers rely on ancestral folk herbal knowledge (ethno veterinary practices) to deal with the diseases of their livestock and poultry. Veterinarians also show considerable interest in the medicinal plants, employed in traditional systems and this emerging trend in favour of herbal medicine is also due to the issues related to the antimicrobial drug resistance and drug residues in foods (milk/meat/eggs) of animal origin. Ethno veterinary practices also covers information on where to find best pasture for animals, how to avoid infected area and where to find nutritious fodder.

DOCUMENTATION OF ETHNO VETERINARY PRACTICES

Rapid reduction in natural resources as a consequence to the expanded urbanization, global warming and reduced natural habitat has posed a considerable threat to the sustainability of traditional medicine that is completely dependent upon herbs, minerals and animal products. Hence, documentation of traditional practice needs to be carried out on a war footing with traditional healers to combat the extinction of traditional knowledge. The local healers spread all over the country are knowledgeable and experienced in traditional veterinary health care. Moreover, the world of research has enough hypotheses in traditional herbal healers to carry out effective research programmes for the health care of livestock and poultry. Documentations of ethno veterinary practices for diseases of cow, sheep and goat viz. mastitis, enteritis, foot and mouth disease, downer cow syndrome, ecto and endo-parasitism, bloat, gever, simple indigestion, skin infection, arthritis, fracture, pox, snake bite, etc were carried out by Ethno Veterinary R&D Centre of TANUVAS located at Veterinary College and Research Institute, Orathanadu, Thanjavur district.

Documentations of Ethno-veterinary practices for diseases of poultry such as Ranikhet disease, enteritis and fowl pox were also carried out.

ETHNO VETERINARY PRACTICES FOR HEALTH CARE

Based on the validations carried out through ICAR-Outreach Programme on ethno veterinary medicine, ethno veterinary practices are being advocated successfully for the primary health care of livestock and poultry against several diseases. For instance, ethno veterinary practice is advocated for the treatment of mastitis which is a devastating and multi-etiological disease involving microbes with mixed infection. It is economically important which needs immediate intervention. In TANUVAS, the following recipe is being advised for the treatment of mastitis in dairy cows. The whole Aloe vera sheath with intact skin is cut into small pieces to which 100 grams of turmeric powder and 10 grams slacked lime are added and ground well to make it into a thick paste. This will be kept as the stock paste which should be prepared afresh every day of the treatment. Milk from the udder should be completely removed and about 100 grams of paste mixed and diluted with 175 ml of water is applied on the entire surface of the udder. This procedure is repeated for six times a day removing the milk from the udder before each application of the paste. Application over the udder should be done at least for three days in acute conditions.

For treating oral lesions of foot and mouth disease, Cumin (*Cuminum cimum*) 10 g, Fenugreek (*Trigonella foenum-graecum*) 10 g, Pepper (*Piper nigrum*) 10 g, Turmeric powder (*Curcuma longa*) 10 g, Garlic (*Allium sativum*) 4 Nos., Jaggery 100 g as Treacle, Coconut gratings (one coconut) are required. Cumin, Fenugreek and Pepper are to be soaked for 30 minutes and then ground. The remaining components need to be mixed in a grinder and added with coconut gratings. All the ground components are mixed together and applied over the oral lesions and can be administered orally.

For treating foot lesions, Garlic (*Allium sativum*) 10 Nos, Turmeric powder (*Curcuma. longa*) 10 g, Tulsi leaves (*Ocimum sanctum*) 10 Nos, Acalypha leaves (*Acalypha indica*) 10 Nos, Henna leaves (*Lawsonia inermis*) 10 Nos and neem leaves (*Azadirachta indica*) 10 Nos. are taken and the ingredients are ground and mixed with gingelly oil and boiled. This mixture is then cooled and applied on the foot lesions for recovery.

HERBAL RESEARCH FOR LIVESTOCK HEALTH

Since the last two decades, herbal research community has contributed to the understanding of the principles and mechanisms of actions of a large variety of herbal preparations and Ethno Veterinary Research and Development Centre of TANUVAS located at Veterinary College and Research Institute, Orathanadu focuses on research and development of products for the diseases of economical importance in livestock and poultry. Research on infertility, mastitis and hepatoprotective activity of various medicinal plants are in progress under ICAR – Outreach Programme on Ethno Veterinary Medicine.

With the introduction of Post-Graduate Diploma in Ethno Veterinary Practices (PGDEVP), herbal research on anti-cancer potential, endo and ecto-parasite infestations, enteritis, respiratory tract infections, antimicrobial activities, immunomodulatory activities, meta analysis of herbal approaches in combating urolithiasis, reverse pharmacology studies of ethnoveterinary practices and evaluation of phytochemicals have been carried out. Documentation of herbal recipes from Tamil Nadu, Kerala and Karnataka and impact of herbal recipes on livestock health were also carried out as a part of herbal research. Moreover, research programmes on evaluation of expression of pro-inflammatory cytokines with antimastitic herbal spray, validation of polyherbal antifungal formulation, and validation of herbal formulation for infertility are in progress under PGDEVP. Evaluation of herbs for efficacy and safety may provide a valuable lead for further targeted research that could generate marketable products with standardized extracts of isolated compounds or modified compounds of natural origin.

PHYTOCHEMISTRY

Phytochemicals are biologically active, naturally occurring chemical compounds found in plants that protect the plants from diseases and damage and contribute to the plant's colour, aroma and flavour. Plants contain more than 4,000 phytochemicals that have been catalogued such as alkaloids, steroids, tannins, glycosides, volatile oils, fixed oils, resins, phenols and flavonoids. The beneficial medicinal effects of plant materials typically result from the combination of these secondary products.

Phytochemicals accumulate in different parts of the plants, such as in the roots, stems, leaves, flowers, fruits or seeds. Many phytochemicals, particularly the pigment molecules, are often concentrated in the outer layers of various plant tissues. The levels of the phytochemicals vary from plant to plant depending on the variety, processing and growing conditions. These phytoconstituents along with nutrients and fibers form an integrated part of defence system against various diseases and stress conditions and therefore most of these constituents are potent bioactive compounds which can be used as precursors for the synthesis of useful drugs. Phytochemicals are known to possess antioxidant, antibacterial, antifungal, antidiabetic, anti-inflammatory, anticancer property and the development of drug resistance and the undesirable side effects of antibiotics have led to the search for new antimicrobial agents in the plant kingdom with unique chemical structure and unexploited mode of action. Hence, screening of plants for the presence of natural chemicals with beneficial properties is essential and is now aided by the development of rapid and accurate phyto-analytical methods. These advanced phyto-analytical facilities has been established at Ethno Veterinary R&D Centre, Orathanadu for finger printing and quantification of phytochemistry in plants.

FUTURE PERSPECTIVES

Mainstreaming of ethno veterinary practices in veterinary curriculum and research might facilitate herbal research in academia with the hypotheses rested with traditional healers on health care of livestock and poultry. Through increased research ethno veterinary knowledge could be authenticated, further loss of ethnoveterinary practices could be prevented and livestock production and health can be augmented for the farmers.

References on request
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RESEARCH HIGHLIGHTS (2017-18)

Developing feeding strategy for methane mitigation by supplemental medium chain fatty acids (MCFA) and *Saccharomyces cerevisiae* to ruminants in paddy straw based ration

- ▲ The minimum dose of coconut oil and *S. cerevisiae* at 1.6 % + 0.8 X 10⁷ CFU in combination decreased the maximum methane (mL) per 100 mg of truly digested substrate by 20.08 % than control by *in vitro* gas production technique.
- ▲ A feeding strategy was developed by supplementing MCFA through coconut oil at 104 mL/ animal/ day and *S. cerevisiae* at 2.4 X 10¹¹/ animal/ day in 60:40 ratio of paddy straw and concentrate based ration which was reduced the methane emission by 8.09% in indigenous dairy cattle.

Research Scholar: Gawande Vaibhav Manikrao

Department of Animal Nutrition, Madras Veterinary College, Chennai – 600 007.

Chairman: Dr. A. Bharathidhasan.

Analysis of benzimidazole resistance in *Haemonchus contortus* of sheep in north eastern zone of Tamil Nadu

- ▲ Out of 591 dung samples from sheep of different districts in the North Eastern zone of Tamil Nadu screened by floatation technique, 460 were found to be positive for gastrointestinal parasites with predominantly strongyles.
- ▲ Morphological identification of larvae revealed the predominance of *H. contortus*. By species specific PCR, 400 L3 larvae were identified as *H. contortus* out of the 446 larvae screened, giving a positivity rate of 89.69 per cent.
- ▲ Genotyping of β tubulin isotype 1 gene of *H. contortus* population showed higher frequency of the heterozygous resistant (rS) genotype.

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- ▲ The frequency of resistant allele varied from 50.5 per cent to 65.5 per cent and that of susceptible allele varied from 34.5 to 49.5 per cent.
- ▲ Resistance to benzimidazoles in Vellore and Thiruvannamalai districts and susceptibility to benzimidazoles in Kancheepuram and Tiruvallur districts were observed.

Research Scholar: Samapika Sahoo
Department of Veterinary Parasitology
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Chairman: Dr. S. Gomathinayagam

Efficacy of various therapeutic protocol for improving conception rate in repeat breeding cows following uterine flushing

- ▲ An investigation was conducted to study the cytological indices, ultrasonographic changes and conception rate in various therapeutic protocols.
- ▲ A total of 72 pluriparous, crossbred cows which failed to conceive after three or more consecutive artificial inseminations with good quality semen were treated with various therapeutic protocols viz., administration of PGF2 α , flunixin meglumine, antioxidants and GnRH either alone or in combination after flushing the uterus in repeat breeding cows.
- ▲ Uterine flushing in combination with injection of Flunixin meglumine (FM) and vitamin E and selenium on day 5 and 12 PAI (Post AI) was found to be the best treatment protocol to augment fertility in repeat breeder cows.
- ▲ Administration of vitamin E and Selenium on day 5 and 12 PAI following induced oestrus with GnRH

at the time of AI resulted in increased overall conception rate in repeat breeding syndrome cows when compared to uterine flushing alone.

Research scholar: S.Alagar
Department of Veterinary Gynaecology and Obstetrics, VC&RI, Namakkal.
Chairman: Dr. R.Ezakial Napoleon.

Sustaining the livelihood of rural weaker sections through innovative scientific dairy farming technologies of Vellore and Cuddalore districts in Tamil Nadu

- ▲ The number of beneficiaries cultivating green fodder had increased by 24% and 16% in Cuddalore and Vellore districts respectively.
- ▲ Azolla cultivation was adopted by 46% of the beneficiaries in Cuddalore district and 58% of the beneficiaries in Vellore district.
- ▲ The average feed cost / day / animal / litre of milk was reduced from Rs.25.51 to Rs.13.41 in Cuddalore district and from Rs.14.75 to Rs.8.52 in Vellore district.
- ▲ By adoption of scientific dairy farming technologies, a beneficiary is able to get an additional monthly income of Rs.2070/- in Cuddalore district and Rs.2490/- in Vellore district.
- ▲ The self employment (entrepreneurial) unit established at both districts for low cost concentrate feed preparation provide an additional income Rs.21000/- and Rs.48000/- in Cuddalore and Vellore district, respectively.

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