

PERCEIVED EFFECTIVENESS AND SCIENTIFIC RATIONALITY OF BREEDING RELATED ETHNOVETERINARY PRACTICES AMONG DAIRY ANIMALS OF TAMIL NADU

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ABSTRACT

*The present investigation was conducted in four districts (Namakkal, Tiruppur, Tirunelveli and Vellore) of Tamil Nadu with an objective to record animal husbandry breeding related ethnoveterinary medicines (EVM) and its scientific rationale. For this two blocks were chosen purposively from each of the selected districts and two villages from each block were selected randomly. Fifteen livestock rearers were selected randomly from each of the villages selected thus making a final sample of 240 livestock farmers. Results of this study revealed that, a total number of five ethno veterinary medicinal practices for anestrus and six EVM practices for retained placenta were adopted by the farmers. Out of these practices, use of half of a coconut and rhizome of viralimanjal (*Curcuma longa*) of 10 g for 10 days orally to the anestrus cow and feeding of the animals with bamboo leaves for the retained placenta was found to be having highest scientific relevant score of 0.5781 and 0.8437 respectively. On the basis of this study it was recommended that dairy cow owners should be made aware of using these two successful EVM treatment for anestrus and retained placenta after validating these practices through suitable clinical trials.*

Key words: Anestrus, Bamboo leaves, Coconut, EVM practices, Retained placenta

INTRODUCTION

Farmers' knowledge and skills are certainly contributing to the formal research and extension for the betterment of livestock farmers. Invention and development of modern technologies are indispensable

tools for the progress of any field. However, the significance of indigenous knowledge should not and cannot be undermined for its sustainability and cost effectiveness.

Animal husbandry practices cover people's knowledge, skills, methods, practices and belief about the care of their animals. Animal husbandry practices have been handed over from one generation to the other and many of the practices are time-tested, environment friendly, cost-effective, readily available involving minimum risk and location specific.

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Ethno veterinary medicine is developed by farmers in field and barns rather than in scientific laboratories. It is less systematic, less formalized and usually transferred by word of mouth rather than writing.

Animal husbandry traditional practices evolved from the experiences of farmers found to possess practical utility in solving some of the farmer's problems under their own conditions. Ethnoveterinary practices for long period of time deprived of its due credit from the veterinarians and policy makers due to various factors.

Of late, however, local animal husbandry practices and Ethno-Veterinary Medicines (EVM) are getting much needed attention from many individuals, specialists, NGOs etc. Hence a study was undertaken to document ethnoveterinary medicines used for breeding related issues in dairy animals and also to find out its scientific rationale.

MATERIALS AND METHODS

Of the seven agro-climatic zones of Tamil Nadu, top four zones namely North Western, Western, Southern and North-Eastern Zone were selected for this study based on the highest livestock population. From each selected zone, a district with highest livestock population based on 19th Livestock census of department of Animal Husbandry and Veterinary services, Tamilnadu was selected for the study. The selected districts were Namakkal, Tiruppur, Tirunelveli and Vellore. The blocks were selected based on the suggestions made by Veterinary Assistant Surgeons (VAS). Villages were selected based on the lottery method of random sampling. From each

block, two villages were selected and thus, a total of 16 villages were selected from eight blocks. Fifteen farmers were selected from each of the eight selected villages by lottery method of random sampling technique. Thus, a total of 240 farmers constituted the sample.

To find out the scientific rationale of the EVM and traditional animal husbandry practices, perception of the specialists involving scientists and Veterinary Assistant Surgeons of state animal husbandry department were obtained after documenting the EVM as well as traditional animal husbandry practices. The scientists specialized in pharmacology of Tamil Nadu Veterinary and Animal Sciences University and randomly selected VAS of Department of Animal Husbandry, Tamil Nadu state were asked to record their opinion about use of the practices. A total of 32 specialists were selected randomly by above procedure for the study. Scientific rationality in dairy farming under breeding with two subheads namely anoestrus and retention of placenta were identified. Scientific relevancy were analysed for 11 items with respect to dairy breeding problems (anoestrus and retained placenta). A score of '2' was reckoned for relevant response, '1' for somewhat relevant response and '0' for not relevant response for each item. Based on this assessment, the scientific relevance score for each practice were assessed by using the formula given below:

$$P_i = \frac{\sum_{i=1}^N X_i}{2N}$$

$$0 \leq P_i \leq 1$$

Where,

N = Number of respondents

$X_i = 2$ if i^{th} practice is relevant

$X_i = 1$ if i^{th} practice is somewhat relevant

$X_i = 0$ if i^{th} practice is irrelevant

Scientific rationality was calculated using the above formula and found that all the practices with relevancy score of above 0.5 had been selected to be relevant. The data so collected were statistically analysed

RESULTS AND DISCUSSION

The traditional EVM in dairy farming related to breeding of dairy animals were documented through interaction and discussion with the farmers of study area. Various traditional EVM practices have been identified and discussed below:

From the Table 1, EVM practices in dairy farming under breeding, it was found that among the five practices documented, feeding 100 g of curry leaves (*Murraya koenigii*) for 10 days (32.92 per cent) served as an effective cure for anoestrus in cattle in all the selected districts and was first ranked followed by administration of Aswangandha (32.08 per cent), feeding of coconut and turmeric and feeding banana with sugar (17.92 per cent) and feeding of Ashoka tree bark (15.00 per cent). Dutt et al. (2018) reported that *M. koenigii* (Curry leaves) and *Aegle marmelos* (wood apple) had been scientifically tested individually and in combination, for ovarian dynamic studies in rats, goats, cattle and buffaloes and was found to be efficacious for the treatment of anoestrous, repeat breeding and

endometritis. In order to induce heat, curry leaves (*Curcuma longa*) 20-30g mixed with concentrate and fed to cattle regularly for one week was recorded by Kumar et al. (2018). Kumar et al. (2014) used Ashoka bark @ 50 g daily to induce heat among the anestrus cows.

Scientific rationale of ethnoveterinary medicines

Similar to that of traditional practices, scientific rationality was found for the EVM practices documented for breeding related issues in dairy farming was also assessed and tabulated in Table 2.

Out of the five practices identified under anestrus, three were found to be relevant viz., feeding coconut and turmeric (0.5781), feeding of curry leaf (0.625) and feeding of Asoka tree (0.5781) bark. Satheshkumar and Punniamurthy (2009) also found that there was highest relevance for feeding of curry leaves to induce heat among cows. Under retention of placenta, three were found to be relevant viz., feeding of bamboo leaves, feeding of palm sugar (0.7031) and feeding of *bhendi* (*Abelmoschus esculantus* - ladies finger) (0.6250). But sprouted whole wheat for 10-15 days continuously was used to induce heat for anestrus cows with a score of 100 % (Tyagi and Singhal, 2012). Yadav et al. (2016) confirmed high relevancy in the use of flowers and leaves of bamboo (*Bombax ceiba*) helps in early removal of retained placenta. Similar observations have been made by Abdisa (2018) who reported the feeding of bamboo leaves (*Bambusa vulgaris*) mixed with black pepper (*Qunda barbarea*) helped in expulsion of placenta in cows in ruminant animals in Oromia, Ethiopia.

Table 1. Breeding related Ethno Veterinary Medicines in dairy animals (N=240)

S. No.	EVM ingredients	Preparation	Application/ Administration	Area (Districts)	Source	Fr.	%	Rank
I. BREEDING								
1. Anoestrus								
a	Curry Leaves	Feeding curry leaves (<i>Murraya koenigii</i>)	Administration for 10 days after insemination.	Vellore, Tiruppur, Thirunelveli, Namakkal	TH & PF	79	32.92	I
b	Winter Cherry (Ashwagandha), Gingely seeds, Poultry eggs, Bananas	150 g of Ashwagandha (<i>Withania somnifera</i>), 150 g of Gingely seeds mixed and grounded and mixed with poultry eggs (2 numbers) and 2 fruits of Bananas (finger banana)	Administered for 7 days.	Vellore, Tiruppur, Thirunelveli	TH & PF	77	32.08	II
c	Coconut, Turmeric	Half of a coconut and 10 g of rhizome of Turmeric (<i>Curcuma longa</i>) are to be grounded	Administered orally once for 10 days.	Vellore, Tiruppur, Thirunelveli	TH & PF	43	17.92	III
d	Banana, sugar	Twelve pieces of Banana (<i>Musa paradisiaca</i>) mixed with 400 g of sugar	Administered for 2 days.	Thirunelveli	TH & PF	43	17.92	III
e	Ashoka tree	100 g of Ashoka tree (<i>Saracaasoca</i>) bark was grounded	Administered to cattle for a week	Namakkal	TH & PF	36	15.00	V

2. Retention of Placenta						
a	Sesame leaves	250gm of sesame leaves are pounded with 1 liter of water	Drenched orally after 8 h of calving	Tiruppur, Thirunelveli, Namakkal	PF	99 41.25 I
b	Paddy (<i>Oryza sativum</i>)	A handful of paddy seeds with Jaggery	Administered orally after 8 h of calving	Thirunelveli, Namakkal	TH & PF	80 33.33 II
c	Bamboo leaves	200 g of bamboo leaves (<i>Bambusa vulgaris</i>)	Administered after 6 h of calving, if placenta had not shed	Vellore, Tiruppur, Thirunelveli, Namakkal	TH & PF	76 31.67 III
d	Bhendi leaves (Lady's finger)	A handful of leaves of Lady's finger (<i>Hibiscus esculantus</i>)	Administered after 6 h of calving, if placenta had not shed	Vellore, Tiruppur, Thirunelveli, Namakkal	TH & PF	48 20.00 IV
e	Large Caltrop- <i>Anai Nerunjil</i> (<i>Petalium murex</i>)	100 gm <i>Anainerunji</i> (<i>Petalium murex</i>) leaves were grounded and mixed with half litre of water.	Drenched orally after 6 h of calving, if placenta had not shed	Tiruppur, Thirunelveli, Namakkal	PF	40 16.67 V
f	Horse gram, Palm sugar	500 g of horse gram (<i>Vigna unguiculata</i>) was boiled, strained and mixed with 100 g of palm sugar	Administered after 8 h of calving, if placenta had not shed	Vellore, Tiruppur, Thirunelveli, Namakkal	TH & PF	28 11.67 VI

Fr – Frequency; TH- Traditional Healers; PF- Practicing farmers

Table 2. Scientific rationale of breeding related EVM in dairy animals by specialists (N=32)

Sl. No.	EVM in dairy animals	Relevant		Somewhat relevant		Not relevant		Relevant Score
		Count	per cent	Count	per cent	Count	per cent	
I. BREEDING								
1. Anoestrus								
a)	Half of a coconut and rhizome of <i>viralimanjai</i> (<i>Curcuma longa</i>) of 10gm are to be ground and given orally once for 10 days.	12	37.50	13	40.63	7	21.88	0.5781
b)	Aswagandha (<i>W. somnifera</i>)-150 gm, gingelly seeds-150 g pounded and mixed with poultry eggs (2 numbers) and 2 fruits of bananas (<i>Poovam</i> variety) and given for 7 days.	2	6.25	18	56.25	12	37.50	0.3437
c)	Feeding curry leaves (<i>M. koenigii</i>) for 10 days after insemination.	11	34.38	18	56.25	3	9.38	0.6250
d)	Twelve pieces of Banana (<i>M. paradisiaca</i>) along with 400gm of sugar are fed for 2 days.	6	18.75	13	40.63	13	40.63	0.3906
e)	Ashoka (<i>Saracaasoka</i>) trees bark 100gm is ground and fed to cattle.	12	37.50	13	40.63	7	21.88	0.5781
2. Retention of placenta								
a)	Feeding of the animals with bamboo leaves.	22	68.75	10	31.25	0	0	0.8437
b)	500 g of Horse gram (<i>V. unguiculata</i>) boiled, strained and mixed with 100gm of palm sugar and fed to the animals.	14	43.75	17	53.13	1	3.13	0.7031
c)	Feeding of Paddy.	2	6.25	18	56.25	12	37.50	0.3437
d)	Feeding of <i>Bhendri</i> (<i>Abelmoschus esculantus</i>) leaves orally.	11	34.38	18	56.25	3	9.38	0.6250
e)	100 gm Anainerunji (<i>P. murex</i>) leaves is ground and fed with half litre of water.	1	3.13	10	31.25	21	65.63	0.1875
f)	250gm of sesame leaves are pounded with 1 litre of water and drenched orally.	7	21.88	17	53.13	8	25.00	0.4844

CONCLUSION

The EVMs used for treating dairy animals are varied with respect to regions and also having cultural values. These traditions are being practiced from generation to generation with no written record but using locally available ingredients to get rid of breeding problems in dairy animals. In this study, it was found that the most scientific rationality was found to be for the use of half of a coconut and rhizome of *virali manjal* (*C. longa*) of 10 g for 10 days orally to the anestrus cow and feeding of the animals with bamboo leaves for the retained placenta. It is needed to further explore these two EVMs on the respective diseases through clinically to strengthen the reliability. After strengthening this practice clinically, these EVMs need to be popularized in the other regions where they are not known or prevalent. Moreover, the traditional healers should be given good patronage to preserve and spread the knowledge to future generations, for the benefit of animal care and livelihood support of the farmers.

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