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Management of repeat breeding in bovine by herbal combination

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Abstract

In the present study, 108 cattle and buffaloes with a history of repeat breeding were managed with Ethno-Veterinary Medicine (EVM) preparations at Kolhapur, Maharashtra. 77.7 % conceived rate was observed after providing the EVM preparation to these animals.

Keywords: Repeat breeding, herbal combination, dairy farming

Introduction

Management of inter-calving interval is a key factor for success in dairy farming. Repeat breeding in cattle and buffaloes is a common occurrence, resulting in higher culling rates and, a lesser number of calves, which impacts the productivity. A repeat breeder is generally defined as a cow that has not conceived for three or more services and is associated with true oestrus (Purohit, 2008) [9]. Kaikini (2002) [7] reported high culling rates in dairy animals due to infertility/sterility in India. Infertility is generally due to reproductive tract abnormalities, faulty Artificial Insemination (AI), hormonal imbalance, poor nutrition and improper management. Delayed ovulation, anovulation and luteal issues may also result in repeat breeding of cattle (Singh and Pant, 1998a, 1999; Jaswal and Singh, 2010) [14, 16, 5]. Infection in the reproductive tract has been reported as another important cause of infertility with early embryonic death (Singh, 1998) [13], due to clinical as well as sub-clinical endometritis (Singh and Pant, 1998b; Thakur *et al.*, 2006a) [15]. Indiscriminate use of antibiotics in the treatment of repeat breeding reportedly leads to antimicrobial resistance (Perumal *et al.*, 2013) [8]. Hormonal treatments in repeat breeding have also shown suboptimal results (Kaikini, 1989; Singh *et al.*, 2002, Perumal *et al.*, 2013; Sarswat and Purohit, 2020) [6, 8, 10]. Therefore, there is a need for an alternative management option for a repeat breeding. Ethnoveterinary medicines (EVM) have been used for ages in India and are currently gaining momentum as a stand-alone mode in mainstream veterinary therapy. Dutta *et al.* (2020) had recorded the high efficacy of EVM for the management of diarrhoea, pyrexia and mastitis in cattle. Satheshkumar *et al.*, (2021) [11] also reported encouraging results with herbal combinations on oestrus induction and enhancement of fertility in crossbred cows with postpartum anoestrus. The work reported here was undertaken to study the field efficacy of "Combination of Herbs" in bovines with a history of repeat breeding in the Kolhapur district, Maharashtra, India.

Materials and methods

A total of 108 animals (35 cows and 73 buffaloes) with a history of repeat breeding, maintained under village conditions in 10 tehsils in Kolhapur district, Maharashtra, India, were included in the study. The veterinarians inspected and examined the animals, which did not conceive even after performing three AI services. All these animals did not have apparent reproductive tract deformities during per rectal examination.

A 20-day regime of the feeding of the ethnoveterinary preparations of herbal origin was given to all these animals (NDDDB EVM booklet, 2018) [3]. Each preparation was given orally once daily from the day of onset of estrus in the chronological order as detailed in Table 1. After EVM intervention, all these animals were kept under close observation and AI service was carried out at an appropriate time at the next estrus. Subsequently, pregnancy diagnosis was confirmed by per rectal examination by the veterinarians after 3 months of AI. Calving was recorded in due course of time.

Table 1: Feeding order of herbs in EVM for repeat breeding.

Days		Herbs	Preparation	Dose
From	To			
1	4	White radish (<i>Raphanus sativus</i> rhizomes)	Whole	1-2 nos. (approx. 100 g)
5	8	<i>Aloe vera</i> whole leaf	Sliced	1 leaf (approx. 100g)
9	12	Drumstick leaves (<i>Moringa oleifera</i>)	Whole	4 handful (approx. 50 g)
13	16	Hadjod stem (<i>Cissus quadrangularis</i>)	Cut pieces	4 handful (approx. 100 g)
17	20	Curry leaves (<i>Murraya koenigii</i>) with turmeric (<i>Curcuma longa</i>)	Mashed	4 handful (approx. 50 g) + 10 g of turmeric powder

Results and discussion

A total of 84 (77.7 %) out of 108 bovines were conceived after providing the EVM preparation for the management of repeat breeding as per the feeding protocol depicted in table 1. Species wise, 26 (74.3 %) cows and 56 (79.5 %) buffaloes resulted in pregnancy. The conception rate was marginally

higher in buffaloes than that of Cattle. All the pregnant animals (84) completed the full-term pregnancy and delivered calves successfully. In none of these animals, abortion was reported. The details of animals with variable repeat breeding status and the conception rate after EVM intervention have been depicted in Table-2.

Table 2: Conception rates following EVM intervention in repeat breeding cases

S. No	Repeat breeding history (post-partum AI service attempts)	Cattle		Buffalo	
		Total	Conceived	Total	Conceived
1	Animals did not conceive even after 3-6 AI services.	19	13 (68.4%)	25	20 (80.0%)
2	Animals did not conceive even after 7 AI services.	16	13 (81.3%)	49	38 (77.6%)
Total		35	26 (74.3%)	73	58 (79.5%)

Although reports on the effect of these EVM preparations on repeat breeding cases are scanty, however Satheshkumar *et al.* (2021) [11] reported an overall conception rate of 57.1% among the post-partum anoestus cows (n=14) treated with the similar EVM preparations mentioned in the current study.

Aloe vera (*A. vera*) and white radish (*R. sativus*) are reported to have anti-microbial and anti-inflammatory effects (Surjushe *et al.*, 2008, Bettaieb *et al.*, 2011) [1]. Elamaran *et al.* (2018) [2] reported that the combination of Moringa (*M. oleifera*), Hadjod stem (*C. quadrangularis*) and Curry leaves (*M. koenigii*) can improve the follicular maturation and ovulating capacity whereas *A. vera* and *R. sativus* help in cleansing the uterine environment. *M. oleifera* (*Moringa*) leaves are rich in minerals and vitamins and also a source of insulin like proteins (Gopalakrishnan *et al.*, 2016) [4]. *C. quadrangularis* phytoestrogen rich fraction have the capacity to increase the serum oestrogen, blood calcium level and vitamin D3 (Seema, 2016) [12]. In view of the above, combination of the above herbs/spices might have caused the improvement of the overall health status and the reproductive system facilitating the conception.

For profitable dairy husbandry practices, a calf is expected every year from each cow. Enormous loss is caused to the farmers in such failure of conception. In the present study, the animals were not conceived even after performing several AI services and with conventional treatment in many of such cases. The EVM intervention in the present study has resulted in the successful management of a large population of the repeat breeding cases. However, further studies may be required on a large population in order to draw a firm conclusion.

Conclusion

Herbal treatment involving successive feeding of radish, *Aloe-vera*, moringa leaves, *Cissus quadrangularis* stem and curry leaves for a period of 20 days as per the stand-alone protocol

reported here, seems to be a cost effective and efficacious alternative for managing repeat breeding cases in cattle and buffaloes.

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