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THERAPEUTIC MANAGEMENT OF NON-INFECTIOUS REPEAT BREEDER BUFFALOES BY USING PHYTOMEDICINE

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ABSTRACT

The goal of the current study was to assess the efficacy of powder Harbominvit in non-infectious repeat breeder buffaloes with a selective test such as white side test, cervical pH, PMNs cell count, Fern patten and estimation of serum phosphorous. 24 buffaloes that tested negative for white side test was chosen for the current study out of a total of 51 buffaloes that underwent the test from Nanded and Parbhani districts of Marathwada region in Maharashtra under infertility camps organized by NDDB, Mother dairy, and Collage of animal and veterinary science Parbhani. MAFSU. In the Treatment group at day 0 before treatment repeat breeder buffaloes showed a Mean ± SE cervical pH value was 7.38±0.07 while the Control group showed a Mean ± SE cervical pH value was 7.59±0.08. The white side test was 100% negative for both groups. The mean ± SE value for PMN cell count for the Treatment group is 2.67±0.31 while the Control group was 2.08±0.22. The mean ± SE value for serum phosphorus value for the Treatment group before treatment is 3.81a±0.11 and after treatment is 4.937a±0.18 while the Control group shows before 3.68a±0.09 and after treatment 4.17a±0.20 and mean ± SE value for Fern pattern for Treatment group and Control group was 0.750±0.13 and 0.66±0.14 respectively. The conception rates in buffaloes of Group 1 with the treatment of powder Harbominvit and Group 2 with no treatment serve as control were 75% (09/12), and 41.66 % (05/12) respectively (Table 2). The overall conception rate in the present study was 58.33% (14/24) in non-infectious repeat-breeding buffaloes. As an herbal combination with chelated minerals and some vitamins has best conception rate in non-infectious repeat breeder buffaloes having the advantage of reducing the cost of treatment in repeat breeding as compared to other treatment protocols.

Keywords: *Bubalus bubalis*, buffaloes, phytomedicine, infertility, repeat breeding, conception rate

INTRODUCTION

The successful key to animal production is reproduction. For successful animal production,

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each animal in the herd must have a proper and optimal reproductive cycle (Sastry, 2017). Effective reproduction is the fundamental factor that determines the economics of animal husbandry. Even in times of lockdown, natural catastrophes, and harsh weather, husbandry provides consistent revenue to the farmer. (Bhandari and Ravishankar, 2020). For the good managemental practices of animal husbandry inter- calving interval is a key factor. Etiologies like anestrus and repeat breeding hamper the inter-calving interval.

In observation during infertility camps repeat breeding syndrome is more common in buffaloes resulting in a lesser number of calves which gives negative impacts on the animal owner for productivity. A repeat breeder is generally defined as a buffalo that has not conceived for three or more services and is associated with true oestrus. The million-dollar question is, "do we work hard for diagnostic techniques in repeat-breeder cases?" Many fields applicable tests like white side test, cervical mucosa pH and PMNs cell count help for confirmative approach for specific etiological aspects.

According to (Khosa, 2020), failure of fertilization is the main cause for worry in non-infectious repeat breeding, but the factors that contribute to smooth pregnancy failure cannot be disregarded. In the reproductive physiology of dairy buffalo, key processes such as luteal development, structural construction of corpus luteum (CL), progesterone availability, and continual progesterone level growth are anticipated. According to (Moore and Thatcher, 2006) in buffalo embryonic mortality is caused by the corpus luteum not working properly. Luteal dysfunction, also known as insufficient corpus luteum function, is often characterized by an estrous cycle that lasts a normal amount of time and a low concentration of peripheral progesterone (p4) because CL synthesis during the luteal phase is delayed. Lowered embryonic survival is caused by insufficient luteinizing hormone secretion during estrus, which is caused by a delay in development (Fields and Fields, 1996).

Some neuro-endocrine and physiological functions in ruminants are alleged to be impaired by hormone and antibiotic medications used to treat a variety of reproductive problems. Additionally, it is imperative that we reduce our reliance on hormones and antibiotics for therapeutic purposes due to the long-term impacts of hormone and antibiotic therapy in food animals and their products, which are crucial for public health Dutta *et al*. (2022). For the serious minimization of hormonal and antibiotics alternate use of herbal plants of Indian origin is a diamond-like solution having the advantages of low cost, needing fewer assay facilities, and having no residual effect on products of public health. Phytomedicine is a combination of sherbal plants namely *Murraya koenigii*, *Aloes barbadensis*, *Mucuna pruriens*, *Aristolochia indica*, *Nigella sativa*, *Tinospora cordifolia*, and *Moringa oleifera*. As a supportive vitamin A and Minerals Zinc, Copper is used to treat non-infectious repeat-breeding buffaloes. Vlad *et al*. (2021)

MATERIALS AND METHODS

The 24 buffaloes used in the current study were 5 to 9 years old, pluriparous, and had a history of repeat breeding syndrome. A total of 51 buffaloes were tested using the white side test to identify non-infectious repeat breeders, and 24 buffaloes with negative results were chosen for the current study from Nanded and Parbhani districts

of Marathwada region in Maharashtra under infertility camps organized by NDDB, Mother dairy, and Collage of animal and veterinary science Parbhani. MAFSU. A sterile AI sheath connected to a 20 ml syringe was inserted per vaginally to collect the cervical mucus, which represented endometrial secretion. The cervical mucus was then transferred to a sterilized test tube to conduct a white side test to identify repeat breeder buffaloes with uterine infection. One milliliter of cervical mucus was combined with one milliliter of a 5% sodium hydroxide (5% NaOH) solution in a test tube for the white side test, which was then heated to boiling point and cooled in running water. It was believed that the presence of yellow color was a sign of infection. The buffaloes that performed the white side test poorly, or did not exhibit any color, were chosen for the study. Immediately following the collection of samples on the day of estrus, the physical characteristics of the cervical mucus pH and Fern pattern were analyzed. The pH of cervical mucus was determined using a digital pH meter. On a clean, dry glass slide, the Fern pattern of the cervical mucus was assessed. The Fern pattern was then examined using a low-power (10X) microscope. It was classified as typical, atypical, and nil. To determine the serum phosphorus concentration, blood samples from the jugular vein of all 24 buffaloes were aseptically taken on the day of estrous. Standard laboratory techniques and ready-made kits were used to estimate the serum phosphorus. Twelve buffaloes each were randomly assigned to one of two groups: the Treatment group or the Control group. Following estrous detection using the AM/PM rule, all the animals were inseminated. The Group 1 (n=12) buffaloes were feed powder of harbominvit 40 gm OID for day 7 after Artificial Insemination. Group 2 (n=12) buffaloes were kept untreated after AI. After 60 days of artificial insemination, a per-rectal examination was used to diagnose pregnancy. The following formula was used to determine the buffalo conception rate between the two groups under investigation:

$$\text{Conception rate (\%)} = \frac{\text{Number of animals conceived}}{\text{Number of animals inseminated}} \times 100$$

According to Snedecor and Cochran (1994), the recorded data was systematically arranged and statistically analyzed using the right design to reach the proper conclusions.

RESULTS AND DISCUSSIONS

Efficacy of powder harbominvit protocols on conception rate

The non-infectious repeat-breeding buffaloes in the study were treated with the herbal formula Herbominvit. Two groups of conception rates were examined. Herbominvit powder was administered to Group 1, while Group 2 was left untreated and functioned as the Control group.

In the current study, the rates of conception in the buffaloes in Group 1, Treatment and Group 2, Control were, respectively, 75% (09/12) and 41.66% (05/12) (Table 2). In the current study, non-infectious repeat-breeding buffaloes had a conception rate of 58.33% (14/24) overall.

Aloe barbadensis and *Murraya koenigii* (Curry Patta) leaves have reproductive properties by influencing the growth processes of LF by achieving dominance, accelerating growth rate, preovulatory size, and the ovulation process. (Kumar *et al*., 2016) Repeat breeding in non-infectious buffalo is frequently caused by environmental stress, as is seen in the Marathwada region of Maharashtra.

Table 1. Details of non-infectious repeat breeder buffaloes' clinical cases were used to select them for clinical experimentation.

Criteria to select or reject cases for trials	Repeat breeder cases		
	Heifers	Post-partum	Total
Total number of repeat breeder animals attended	19	32	51
Cases rejected due to palpable genital pathology	04	01	05
Number of animals rejected due to low pH of cervical mucus (>10)	04	05	09
Number of animals rejected on the basis of PMN cell count (>5)	00	01	01
Number of animals selected on negative Whiteside test and PMN cell count (<4)	06	18	24
Animal kept for Control group	05	07	12
Animal with body score condition score <2.5 or 3	10	14	24
Total cases selected for experimentation	10	14	24

Table 2. Details of the powdered Harbominvit response in non-infectious repeat breeder buffaloes compared to the Control group in terms of gynecological symptoms.

Days	Parameter	Harbo MinVit group		Control	
0	No of animal under trial	**12**		**12**	
	Cervical pH	7.38±0.07		7.59±0.08	
	White side test	Negative		Negative	
	Ferning Patten	Typical	Atypical	Typical	Atypical
		11	1	9	3
	Serum phosphorus before	3.87±0.09[a]		3.69±0.09[a]	
	Serum phosphorus after	4.94±0.18[a]		4.14±0.22[b]	
	Time of AI/NS	Third Phase of Estrus		Third Phase of Estrus	
21	Conception rate	NR	R	NR	R
		09(75%)	03(25%)	05(41.66%)	07(58.33%)
42	No. of animal exhibited signs of second estrus	04		08	
60	Pregnancy rate	66.66%		33.33%	

Due to the presence of many bioactive compounds such as flavonoids, antioxidants, and phenolics the seeds of the velvet bean Mucuna pruriens are highly valued on the market which helps to reduce oxidative stress (Suryawanshi *et al*., 2020). Thymoquinone (TQ), one of the most potent components of *Aristolochia indica*, *Nigella sativa*, and *Tinospora*, has a range of beneficial properties. This plant has anti-inflammatory, immune-stimulating, and antibacterial properties to make it beneficial (Satheshkumar *et al*., 2021). *Moringa oleifera* (Drumstick) as support for nutrition is a significant plant that is rich in specific micro and macronutrients. Its leaves stimulate the activity of the rumen microbiota by preserving micronutrients, vitamins, hormones, and enzymes that are necessary for effective digestion, absorption, and metabolism which facilitates luxurious processes like reproduction. El-Sanafawy *et al*. (2017) Vitamin A and minerals like zinc and copper are used to activate immune defenses and promote epithelial regeneration. As no direct effects were found on the conception rate in buffaloes (Patil *et al*., 2014).

In the Treatment group at day 0 before treatment repeat breeder buffaloes showed a Mean ± SE pH value was 7.38±0.07 while the Control group showed a Mean ± SE pH value was 7.59±0.08. The white side test was 100% negative for both groups. The mean ± SE value for PMN cell count for the Treatment group is 2.67±0.31 while the Control group was 2.08±0.22. The mean ± SE value for serum phosphorus value for the Treatment group before treatment is 3.81^{a}±0.11 and after treatment is 4.937^{a}±0.18 while the Control group shows before 3.68^{a}±0.09 and after 4.17^{a}±0.20 and mean ± SE value for Fern pattern for Treatment group and Control group was 0.750±0.13 and 0.66±0.14 respectively.

A gynecological examination conducted after 21 days showed that the Treatment groups conception rate was 75%, compared to 41.66% for the Control group. A 60-day gynecological evaluation revealed that the pregnancy rates in the Treatment and Control groups were 66.66 and 30%, respectively.

In the present study the conception rate after 21 days of insemination with powder Harbominvit which was in-between Dutta *et al*. (2022) 77.7 (%) and Verma *et al*. (2014) 73.1(%) while Liu *et al*. (2014) found higher conception rate than this study.

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