International Journal of Advanced Biochemistry Research

ISSN Print: 2617-4693
ISSN Online: 2617-4707
IJABR 2024; 8(1): 502-504
www.biochemjournal.com
Received: 03-11-2023
Accepted: 08-12-2023

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Efficacy evaluation of some polyherbal heat inducers in buffaloes

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DOI: https://doi.org/10.33545/26174693.2024.v8.i1g.426

Abstract
The present investigation was aimed to evaluate the efficacy of polyherbal heat inducers Prajana, Janova and AV/OIP/22 (M/s Ayurvet Limited, Baddi, H.P.) in anestrus/silent buffaloes. The trial was conducted on 32 anestrus/ silent buffaloes at livestock farm (Apollo College of Veterinary Medicine, Jaipur) and at villages adopted by the college. The Buffaloes were divided into four groups, each consisting of Eight animals. The group T_0, kept as control and no treatment was given. The group T_1, oral administration of capsule Janova @ 3 capsule/ day for two days and repeat after 10 days if needed. Group T_2 was treated orally with AV/OIP/22 @ 200 gm. with jaggery or molasses on empty stomach, withhold feeding for two hours after administration, repeat after 10 days if needed. Group T_3 was administered orally with capsule Prajana @ 3 capsules/ day for three days with jaggery, repeat after 10 days if needed. The result of the above treatments, recorded as number of doses required for heat induction, concentration of plasma Progesterone, concentration of plasma Estradiol, concentration of plasma Cortisol, success rate at first service and number of services for conception. Results revealed that product AV/OIP/22 (M/s Ayurvet Limited, Baddi, H.P.) have superior results over capsule Janova and capsule Prajana.

Keywords: Anestrus, buffalo, cortisol, estrogen, Janova, Prajana, progesterone, silent heat

Introduction
Buffalo is called black gold in India because of their adoptive nature in harsh climatic conditions, high diseases resistance, high milk yield with high fat percent, survival capacity in low level feeding and poor management. Because of high contribution of buffalo in milk, meat and draft, it is valuable species for Indian farmers. India has more than 105 million of buffalo population that constitutes 57% of the total world buffalo population and India stands number one across the globe in milk production and of which more than 60% buffaloes alone (18th Livestock census, 2007) contribute milk. However, its production and reproduction capacity is not fully expressed because of its low inherent reproductive efficiency (Terzano *et al*., 2012) [8]. Anestrus following parturition is main problem in milking buffaloes, which is higher in conventionally managed herds and lower in well-organized dairy farms (Kumar *et. al.,* 2013) [3]. The incidence of Anestrus in buffalo has been reported as high as 60.83 percent in comparison of cattle, where anestrus incidence reported as 53.15 percent. (Pandit, 2004) [5]. Ovarian inactivity, silent heat, endometritis and repeat breeding are the main reproductive disorders in buffaloes results in huge economic loss to dairy owners and farmers (Ravinder *et al*., 2016; Rajkumar *et al*., 2021) [7, 6]. The etiological factors which are responsible for anestrus in buffalo are dietary insufficiency of minerals like phosphorus, calcium, zinc, copper which comes under inadequate nutrition (Kumar *et al.,* 2014) [4] because minerals and vitamins plays a major role in action of enzymes and hormones.
The use of herbal preparations improves the production and reproduction efficiency of animals because it helps timely onset of estrus and ovulation and increases the chances of conception (Hadiya *et al*., 2017; Jyothi *et al*., 2020) [2, 1].

Materials and Methods
The present trial was carried out at livestock farm (Apollo College of Veterinary Medicine) and at villages adopted by the college to evaluate the efficiency of herbal products like Janova, AV/OIP/22 (M/s Ayurvet Limited, Baddi, H.P.) and Prajana. A total 32 silent heat/ anestrus buffaloes were selected for the trial.

The buffaloes were allocated into four groups, T_0- T_3 (n=8) using systematic randomization so that the groups are as close to each other as possible. The group T_1, oral administration of Janova @ 3 capsule/ day for two days and repeat after 10 days if needed. Group T_2 was treated orally with AV/OIP/22 @ 200 gm. with jaggery or molasses on empty stomach, withhold feeding for two hours after administration, repeat after 10 days if needed. Group T_3 was administered orally with Prajana @ 3 capsules/ day for three days with jaggery, repeat after 10 days if needed.

Results and Discussion

Table 1: Number of doses required for heat induction

Groups (n=08)	No. of animals showing signs of heat		Total no. of animals show heat (%)
	Dose I	Dose II	
T_0	0	0	00.00
T_1	1	1	25.00
T_2	4	2	75.00
T_3	0	2	25.00

Number of doses required for heat induction are provided in table 1. Results of our study revealed that 6 buffaloes treated with AV/OIP/22 in group T_2 showed the symptoms of estrus in two doses. Four buffaloes showed estrus within 5-7 days after administration of first dose and two buffaloes showed estrus within 6-8 days after second dose administered 10 days post first dose. Two buffaloes treated with Janova in Group T_1 showed estrus within 8-10 days. Two buffaloes treated with Prajana capsule showed estrus in group T_2 within 8-10 days. None of the buffalo showed signs of estrus in group T_0.

Table 2: Concentration of Plasma Estradiol, Progesterone and Cortisol

Groups (T_0)		Hormone Estimation		
		Estradiol(pg/ml)	Progesterone(ng/ml)	Cortisol(ng/ml)
T_0	Before treatment	1.921 ± 0.14^{aA}	1.195 ± 0.18^{aA}	2.664 ± 0.25^{aA}
	After treatment	1.848 ± 0.18^{aA}	1.339 ± 0.25^{aA}	2.664 ± 0.25^{aA}
T_1	Before treatment	2.131 ± 0.13^{aA}	1.158 ± 0.11^{aA}	2.49 ± 0.17^{aA}
	After treatment	4.241 ± 1.35^{aA}	0.9188 ± 0.18^{aA}	3.328 ± 0.47^{aA}
T_2	Before treatment	2.159 ± 0.2^{aA}	1.165 ± 0.13^{aA}	2.471 ± 0.24^{aA}
	After treatment	15.121 ± 2.12^{bB}	0.742 ± 0.1^{aB}	6.598 ± 0.6^{bB}
T_3	Before treatment	2.501 ± 0.13^{aA}	1.071 ± 0.14^{aA}	2.618 ± 0.14^{aA}
	After treatment	4.903 ± 1.55^{aA}	0.99 ± 0.16^{aA}	3.326 ± 0.4^{aA}

Serum estradiol concentration (pg/ml) before treatment was 1.921 ± 0.14^{aA}, 2.131 ± 0.13^{aA}, 2.159 ± 0.2^{aA} and 2.501 ± 0.13^{aA} respectively in group T_0, T_1, T_2 and T_3. Serum estradiol concentration (pg/ml) after treatment was 1.848 ± 0.18^{aA}, 4.241 ± 1.35^{aA}, 15.121 ± 2.12^{bB} and 4.903 ± 1.55^{aA} respectively in group T_0, T_1, T_2 and T_3. Serum progesterone concentration (ng/ml) before treatment was 1.195 ± 0.18^{aA}, 1.158 ± 0.11^{aA}, 1.165 ± 0.13^{aA} and 1.071 ± 0.14^{aA} respectively in group T_0, T_1, T_2 and T_3. Serum progesterone concentration (ng/ml) after treatment was 1.339 ± 0.25^{aA}, 0.9188 ± 0.18^{aA}, 0.742 ± 0.1^{aB} and 0.99 ± 0.16^{aA}respectively in group T_0, T_1, T_2 and T_3. Serum cortisol concentration (ng/ml) before treatment was 2.664 ± 0.25^{aA}, 2.49 ± 0.17^{aA}, 2.471 ± 0.24^{aA} and 2.618 ± 0.14^{aA} respectively in group T_0, T_1, T_2 and T_3. Serum cortisol concentration (ng/ml) after treatment was 2.664 ± 0.25^{aA}, 3.328 ± 0.47^{aA}, 6.598 ± 0.6^{bB} and 3.326 ± 0.4^{aA} respectively in group T_0, T_1, T_2 and T_3.

Table 3: Success rate at first service

Groups	Percent (%)
T_0	00.00
T_1	00.00
T_2	50.00
T_3	00.00

Results of success rate at first service are mentioned in table 3. In group T_2, three buffaloes are conceived after first service and none of the buffalo conceived in group T_0,T_1, T_3 after first service.

Table 4: Number of Services for Conception

Groups	Number of Service
T_0	00
T_1	03
T_2	1.8
T_3	02

Results of number of services for conception are mentioned in table 4. Average number of services for conception are 1.8 in group T_2, 3 for group T_1 & 2 for group T_3.

Conclusion

Of a total 8 buffaloes, 4 (50%) showed signs of estrus after the first dose and 2 (25%) more after second dose of AV/OIP/22 administered 10 days after the first dose. Two did not show any signs of estrus. When compared with AV/OIP/22, buffaloes administered with Janova and Prajana, only 2 each (25%) showed signs of estrus. Six buffaloes in group T_1 & T_3 each respectively did not show any estrus signs. Intensity of heat was high in group T_2 which was treated by AV/OIP/22 but intensity of heat was fair in treatment group T_1 & T_3 which was administered by Janova & Prajana. First service conception rate was 50% in group T_2 Whereas it was 0% in Group T_0, T_1 & T_3. Number of service for conception was 1.8 in group T_2 which was administered by AV/OIP/22 instead of group T_1 & T_3 where it was 3 and 2.

The findings of present study provide the circulating levels of estradiol, progesterone and cortisol during estrus cycle and anestrus period. The serum estradiol concentration

(pg/ml) within and between groups T_0, T_1 & T_3 did not show any significant difference (p>0.05). However, serum estradiol concentration (pg/ml) significantly differed (p<0.05) among the group T_2 as well as between the groups when compared with group T_0, T_1 & T_3. The serum cortisol concentration (ng/ml) within and between groups T_0, T_1 & T_3 did not show any significant difference (p>0.05) but serum cortisol concentration (ng/ml) significantly differed (p<0.05) among the group T_2 as well as between the groups when compared with group T_0, T_1 & T_3.

Hence, above findings concluded that the product AV/OIP/22 has superior results than Janova and Prajana for induction of heat in silent / anestrus buffaloes.

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