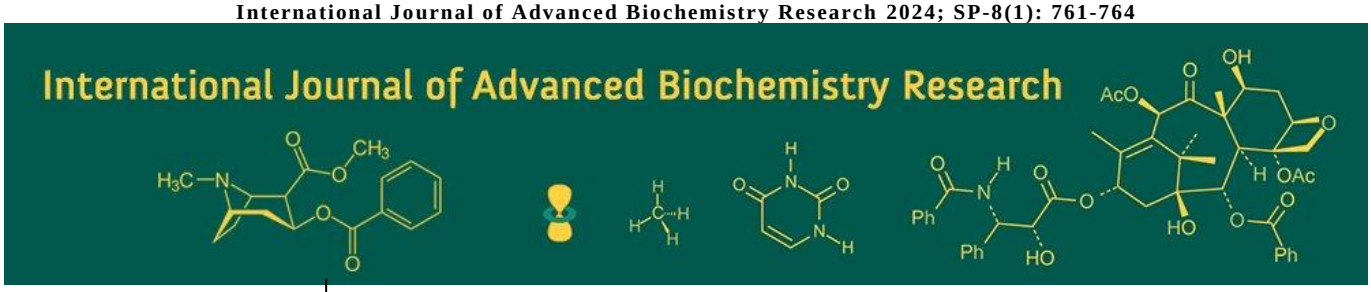

ISSN Print: 2617-4693
ISSN Online: 2617-4707
IJABR 2024; SP-8(1): 761-764
www.biochemjournal.com
Received: 26-11-2023
Accepted: 30-12-2023

Jitendra Kumar
Assistant Professor, Department of Veterinary Gynecology and Obstetrics, IIVER-Rohtak, Haryana, India

Sushant Srivastava
Professor & Head Department of Veterinary Gynecology and Obstetrics, College of Veterinary Science and Animal Husbandry, N.D.U.A.&T., Kumarganj, Faizabad, Uttar Pradesh, India

Poonam Yadav
Ph.D Scholar, Division of Physiology and Climatology ICAR-IVRI, Izatnagar, Uttar Pradesh, India

Shivika Chouksey
Ph.D Scholar Department of Veterinary Gynecology and Obstetrics, College of Veterinary Science and Animal Husbandry, Jabalpur, NDVSU, Jabalpur, Madhya Pradesh, India

Pooja
Assistant Professor, Department of Veterinary Gynecology and Obstetrics, IIVER-Rohtak, Haryana, India

Corresponding Author:
Jitendra Kumar
Assistant Professor, Department of Veterinary Gynecology and Obstetrics, IIVER-Rohtak, Haryana, India

Effect of herbal, homeopathic and GPG protocol on biochemical parameters, ovarian activity in postpartum anoestrus cows

Jitendra Kumar, Sushant Srivastava, Poonam Yadav, Shivika Chouksey and Pooja

DOI: https://doi.org/10.33545/26174693.2024.v8.i1Sj.422

Abstract
The present study was designed to assess the therapeutic efficacy of herbal medicine and GPG protocol on induction of cyclicity in postpartum anoestrus cows. Fourty (n=40) postpartum anoestrus cows presented at Teaching Veterinary Clinical Complex. The animals were divided in to five groups comprising of Group-G0 as control, Group G-I as mineral mixture, group G-II as Janova, Group G-III as sepia and G-IV as GPG treated group. After starting of the treatment animals were continuously observed for oestrus signs twice daily in morning and evening. The percentage of oestrus induction in group G-I, G-II, G-III & GIV was recorded as 50%, 62.50%, 75%, 87.50%, respectively and conception rate was observed as 50%, 60%, 33.33% and 42.85% after first successful insemination in G-I, G-II, G-III & GIV group, respectively. A Significantly higher (p>0.05) values of serum Total protein, Calcium, Phosphorus, Glucose, Albumin and Total cholesterol were observed in normal cyclic cows. The findings of present experiment suggested that commercial herbal preparation (Janova), homeopathic medicine (Sepia) and GPG Protocol have effective in the induction of cyclicity in postpartum anoestrus cows.

Keywords: Anestrous cow, Janova, sepia, GnRH-PG-GnRH

Introduction
The most frequent cause of infertility in dairy cattle is anoestrus, or failure of the estrum, which results in significant economic losses due to longer calving intervals, lower calf crops, and shorter productive lives. There have been reports of anoestrus incidences in India ranging from 12.37% to 64.81% (Pariza *et al*. 2013) [13]. True anoestrus is primarily brought on by insufficient nutrition, senility, chronic or incapacitating disease, seasonal fluctuations, and high milk production. Since a prolonged period of ovarian quiescence and an ovulation are mostly caused by lowered plasma LH levels, it has been demonstrated that a specific threshold frequency of LH production is required to establish ovarian cyclicty after calving, Grunert (1981) [5]. Energy shortage, malnourishment, stress, endogenous opioid peptides, breastfeeding, and decreased insulin concentration are variables that reduce the frequency of the LH pulse (Patil *et al.* 1992) [14]. Currently, homeopathy is one of the alternative therapies with the quickest rate of growth. The body's natural healing process is triggered by using dynamized microdoses of minerals, herbs, and animal products. In Europe, especially in Germany, France, and Great Britain, veterinary homeopathy has the strongest contemporary heritage. Homeopathic remedies are said to be a very safe, reasonably priced, and effective way to treat a wide range of illnesses. Unlike allopathy, they are also said to have no harmful side effects. Homeopathy treatment is currently becoming more and more well-known across all spheres of human civilization (Day, 1998) [4].
In order to induce oestrus and restore ovarian cyclicity in anoestrus-impaired animals, a variety of hormonal preparations, such as GnRH, eCG, and progestogen, have been tested either alone or in combination. Both endogenous and exogenously administered prostaglandin (PGF2α) influences luteal regression, implantation, parturition, and postpartum physiology by contracting the myometrium and increasing the pituitary's sensitivity for improved release of LH (White and Dorson 1990) [19].

According to Wollard and Geissmann (2010) [20], PGF2 treatment in beef cows reduces the time after giving birth and may have an impact on the initial estrus days in dairy cows. A combination of mechanisms cause's cows treated with PGF2α or made to secrete PGF2α to have a shorter postpartum period. A faster rate of uterine involution or follicular development could promote ovarian cyclicity. Interaction between the uterus, the hyothalmic pituitary ovarian axis and PGF2α in early postpartum estrus expression is through the release of GnRH. Because progesterone suppresses the immune system, PGF2α can strengthen the uterine barrier. Phagocytosis and lymphocyte function are improved by pro-inflammatory PGF2α, which induces the synthesis of cytokines (Singh *et al.* 2006) [17].

Materials and Methods

The present study was carried out at Department of Veterinary Gynecology and Obstetrics, College of Veterinary Science and Animal Husbandry, N.D.U.A.T., Kumarganj Faizabad. The study was planned to develop cost effective therapeutic management of postpartum anoestrus in cows. The postpartum anoestrus cases presented at Veterinary Hospital Khandasa Block and the Villages in vicinity of university were selected for the study. The post-partum anoestrus cows which were having small, smooth and inactive ovaries with the absence of graffian follicle or corpus luteum and characterized by absence of estrus were selected for herbal treatments. The selected postpartum anoestrus cows were divided into four (G0, GI, GII, GIII, GIV) group and one normal cyclic cows (GV) group were also included for assessment of normality after treatment of acyclic animals with ethno-veterinary medicines. Each group was comprising of eight (n=8) animals. The animals in G0 grouped as untreated control. The group G1 is treated with only mineral mixture whereas GII, GIII and GIV group was treated with herbal medicine i.e. Janova, Homeopathic medicine (Sepia-30) & GPG Protocol, respectively.

All post partum anoestrus cow were treated with fenbendazole @ 7.5 mg per kg body weight to reduce the worm load in affected animals and animals were supplemented with chelated mineral mixture powder @ 50 gm p.o, once a day for 20 days before start of treatment to provide uniform condition and elimination of parasite and nutritional deficiency of major and micro minerals important for reproduction and health status. The overall estrus induction and conception rate was recorded as 50% & 75% for mineral mixture, 62.5% & 80% for Janova, 75% & 66.66% for Sepia, 87.5% & 57.14% for GPG treatment. The recovery rate was highest in GPG treated group.

Treatment Protocol

The selected fourty (n=40) anestrous cows will be divided into five groups, each comprising of eight (n=8) animals. The treatment will be given as per following schedule and various parameters were assessed.

The treatment will be given as per following schedule and various parameters were assessed

Group	Treatment
G0	Anoestrus without treatment
G I	Deworming (day 0) + Min. Mix. Supplementation for 10 days (1-10 days), served as control
G II	Deworming (day 0) + Min. Mix. Supplementation for 10 days (1-10 days) + jenova capsule daily for 2 days followed by 3 capsule orally for two days on 11th day
G III	Deworming (day 0) + Min. Mix. Supplementation for 10 days (1-10 days) + sepia 30, 10 drops orally daily for 10 days
G IV	Deworming (day 0) + Min. Mix. Supplementation for 10 days (1-10 days) + GnRH-PG-GnRH regimen
G V	Normal estrus exhibited cow

Results and Discussion

Blood Biochemical Parameters

A. Total protein (gm/dl): There was significantly higher (p<0.05) level of total serum protein in

Responded animals in comparison to anoestrus control. Virmani *et al.* (2011) [18] found similar result in pretreated & post treated group as 6.52±0.57 and 8.61±0.64, respectively. In contrast to our findings, Mahour *et al.* (2011) [10] found that the level of serum total protein concentration was significantly higher (p<0.05) in anoestrus cows (7.29±0.31 gm/dl) as compared to induced estrus cows (6.36±0.48 gm/dl). Bhoraniya *et al.* (2012) [3] found total protein mean values in anoestrus and normal cyclic cow under study were 5.89±0.23 and 6.20±0.20 gm/dl, respectively. According to Pariza *et al.* (2013) [13], mean total serum protein in anoestrus and control group of cow were 3.4±0.8 and 5.2±0.8 gm/dl, respectively. It was significantly (p<0.05) lower in anoestrus group than that of control group of cows.

B. Calcium (mg/dl): There was significantly higher level (p<0.05) of serum calcium in cyclic & treated animals in comparison to pretreatment value. Virmani *et al.* (2011) [18] found similar results of mean values of serum calcium level in normal cyclic cow and anoestrus cow 7.50±1.21 and 9.27 mg/dl, respectively. In contrast to our finding, Bhoraniya *et al.* (2012) [3] found serum calcium level in anoestrus and normal cyclic group was 9.67±0.23 and 8.01±0.79, respectively. Singh *et al.* (2008) [16] reported lower concentration of serum calcium in cyclic group as compared to anoestrus Hariana cows.

C. Phosphorus (mg/dl)

It was observed that serum phosphorus concentration is significantly higher (p<0.05) in treatment groups in comparison to pretreated cows. Agrawal *et al.* (2015) [1] found similar results, he reported that normal cyclic animals had significantly (p<0.05) higher phosphorus level as compared to the anoestrus animal. The mean serum phosphorus value in anoestrus animals were lower than that recorded by Virmani *et al.* (2011) [18] and Bhoraniya *et al.* (2012) [3]. The phosphorus level of cyclic & responded cows were lower than that of Virmani *et al.* (2011) [18], Bhoraniya *et al.* (2012) [3] & The phosphorus level was significantly higher in conceived than non-conceived group Kumar and Punniamurthy (2009) [7].

D. Glucose (mg/dl): It was observed that glucose level is significantly higher (p<0.05) in post treated in comparison

to pretreatment group. The mean value of serum glucose is 42.58±6.73 and 73.7±10.69 in anoestrus and normal cyclic cow, respectively. The serum glucose was reported to be an important factor which modulates reproduction and the same at lower level is postulated as the neither cause for decreased fertility rate as well as for nor cyclicity Yadav *et al.* (1995) [21]. Many workers have supported the view that the concentration of glucose reflects the energy status and reproductive activity of the animals (Morrow, 1969) [12]. Mc Clure (1965) [11] observed that variations in blood glucose were clearly linked to cyclicity and fertility. The loss of ovarian activity in hypoglycemic animals is due to the effect of hypoglycemic state on the release of gonodotrophins from hypothalamus. Kumar and Saxena (2010) [8], Suggested that the reduced concentration of glucose and insulin in blood were associated with nutritional anoestrus. Glucose thus appears to be centrally involved in the release of LH and this presumably reflects its role in modulating GnRH release.

E. Albumin (mg/dl): It was observed that serum albumin level is significantly higher (p<0.05) in treatment group in comparison to pre treatment group. Virmani *et al.* (2011) [18] finding is similar to our finding, she reported slightly elevated serum albumin in cow suffering from postpartum anoestrus compared to control group. It is generally accepted that albumin levels are positively related with productive and reproductive performance. In contrast to our finding, Mahour *et al.* (2011) [10] reported that level of serum albumin was significantly higher (p<0.05) in anoestrus cows (3.25±0.12 gm/dl) as compared to induced estrus cows (2.61±0.18 gm/dl).

F. Cholesterol (mg/dl): It was observed that mean values of cholesterol is significantly (p<0.05) higher in treatment group. In contrast to our finding, Virmani *et al.* (2011) [18] found that cholesterol levels decreased as the animal approached towards cyclicity. The utilization of cholesterol for optimum steroid hormone biosynthesis to maintain the cyclicity may be correlated with lower level of cholesterol in cyclic animal (Zaman, 1985) [22]. According to Ahmad *et al.* (1985) [22], the mean values of cholesterol in cyclic cow and a non-cyclic cow was 199.12±9.38 and 202.96 ±14.84, respectively. He reported that difference between cyclic and non cyclic animals was no significant. Similarly, Zaman, (1985) [22] reported a non significant difference in level of plasma cholesterol of cyclic and non cyclic animal. In contrast to present findings, Bhoraniya *et al.*, (2012) [3] and Virmani *et al.*, (2011) [18] suggested that the values of cholesterol is higher in non-cyclic animal to comparison of cyclic animal. Singh *et al.* (2006) [17] observed that high level of cholesterol increased the estrogen level resulting in manifestation of heat, as cholesterol is the precursor of steroid hormones.

Luktuke and Sharma (1978) [9] supported our finding, he found that high incidence of repeat breeding and anoestrus are associated with the deficiencies of cholesterol might be due to inadequate availability of metabolites and metabolic hormones in the central nervous system causing low level of GnRH secretion from the hypothalamus and also the gonadotrophic hormones from the anterior pituitary gland. Kumar and Saxena, (2010) [8] recorded high plasma total cholesterol concentration in normal cyclic than the repeat breeder cows. Though there was no significant difference in the levels between conceived and non-conceived groups. Jain and Pandita (1995) [6] observed significantly higher level of total serum cholesterol at induced estrus. Mahour *et al.* (2011) [10] observed that mean total cholesterol level in the cows during anoestrus before giving treatment was 125.01±9.65 mg/dl. At induced estrus the overall mean total cholesterol level was 118.90±10.2 mg/dl, whereas Randel *et al.* (1988) [15] observed that cholesterol level was significantly higher in normal cyclic crossbred cows as compared to anoestrus cows.

Table 1: Effect of mineral mixture, commercial herbal drug (Janova), homeopathic medicine (sepia-30) and GPG protocol on biochemical profile (mean±SE) in postpartum anoestrus cows

Parameter	Status	Treatments					
		G0	G1	G2	G3	G4	G5
Total Protein	Before	6.72 ± 0.12^{Y}	$6.91\pm0.10^{A,Y}$	$6.98\pm0.08^{A,}$	$6.87\pm0.06^{A,Y}$	$6.82\pm0.07^{A,Y}$	8.53 ± 0.02^{X}
	After	$6.75\pm0.14^{Y,a}$	$7.93\pm0.07^{B,ab}$	$8.46\pm0.06^{B,bc}$	$8.48\pm0.08^{B,bcd}$	$8.65\pm.04B,^{cde}$	8.54 ± 0.04^{X}
Calcium	Before	7.62 ± 0.10^{Y}	7.71 ± 0.06^{Y}	7.66 ± 0.06^{Y}	7.69 ± 0.08^{Y}	7.74 ± 0.06^{Y}	9.20 ± 0.04^{X}
	After	$7.65\pm0.10^{a,Y}$	$8.95\pm0.07^{B,ab}$	9.31±0.06B,bc	$9.29\pm0.06^{B,bcd}$	9.49±0.05B,ced	9.21 ± 0.03^{X}
Phosphorus	Before	3.81 ± 0.05^{Y}	3.85 ± 0.03^{Y}	3.84 ± 0.03^{Y}	3.84 ± 0.04^{Y}	3.87 ± 0.03^{Y}	4.60 ± 0.02^{X}
	After	3.83 ± 0.05^{aY}	$4.47\pm0.03^{B,ab}$	4.65±0.03B,bc	$4.65\pm0.03^{B,bcd}$	$4.74\pm0.02B,^{cde}$	4.61 ± 0.01^{X}
Glucose	Before	50.50 ± 0.58^{Y}	51.30 ± 0.72^{Y}	51.52 ± 0.85^{Y}	51.73 ± 0.70^{Y}	51.81±2.16	57.05 ± 0.43^{X}
	After	50.95 ± 0.67^{aY}	$55.13\pm0.69^{B,ab}$	$58.05\pm0.99^{B,bc}$	$58.48\pm1.05^{B,bcd}$	$58.86\pm0.95^{B,bcde}$	57.33 ± 0.79^{X}
Albumin	Before	2.71 ± 0.04^{Y}	2.72 ± 0.06^{Y}	2.81±0.07	2.89±0.06	2.91±0.65	3.42 ± 0.13^{X}
	After	2.76 ± 0.04^{a}	$3.26\pm0.06^{B,ab}$	$3.51\pm0.09^{B,bc}$	$3.62\pm0.05^{B,bcd}$	$3.69\pm0.03^{B,cde}$	3.45 ± 0.04^{X}
Cholesterol	Before	80.40 ± 0.44^{Y}	81.12 ± 0.58^{Y}	81.99±0.73	81.36 ± 0.60^{Y}	81.91±0.70	129.7 ± 0.48^{X}
	After	80.58 ± 0.66^{a}	$124\pm0.55^{B,ab}$	$131.4\pm1.07^{B,bc}$	$132.0\pm0.98^{B,cd}$	$133.4\pm0.65^{B,cde}$	129.8 ± 0.51^{X}

Mean bearing different superscript in the column (A, B) and in a row (a, b, c, d, and e) significantly differed repeatedly for each attributes

Conclusion

Biochemical profile was differed significantly between cyclic and postpartum anoestrus cows, so that these parameters helpful in the diagnosis of postpartum anoestrus cows. Overall estrus induction and conception rate was recorded as 50.00% & 75.00% in Mineral mixture, 62.50% & 80% in Janova, 75% & 66.66% in Sepia, 87.50 & 57% GPG treated group. Based on present finding it is concluded that GPG protocol and homeopathic drug (Sepia-30), have effective to estrus induction in postpartum anoestrus cows and GPG protocol is more effective to estrus induction in postpartum anoestrus cows. The commercial herbal preparation Janova and homeopathic medicine (Sepia) will reduce the cost of treatment. Based on above, it can be stated that anoestrus is most commonly occurring reproductive problem of cattle. It is functional disorder of reproductive cycle.

Reference

1. Agrawal J, Saxena A, Singh V. Study on metabolic profile of repeat breeder, postpartum anoestrus and normal cyclic Sahiwal cows. Indian J Anim Repro. 2014;36(1).
2. Ahmed FA, Tamuls MK, Akhtar F. Effect of placentrex and Janova in induction of oestrus in anoestrus crossbred cattle. Indian Vet J. 2003;80:1077-1079.
3. Bhoraniya HL, Dhami AJ, Naikoo M, Parmar BC, Sarvaiya NP. Effect of estrus synchronization protocols on plasma progesterone profile and fertility in postpartum anestrous Kankrej cows. Trop Anim Health Prod. 2012;44(3):online. DOI: 10.1007/s11250-011-0057-1.
4. Day C. Homeopathic Medicine: Principle and Research. In: Complementary and Alternative Medicine, Principles and Practices, Allen MS, Schoen and Susan G Wynn. Mosby Inc., Missouri. 1998:469-514.
5. Grunert E. Zur ovardystrophia beim Rind. Collegium Veterinarium; c1981. p. 73-77.
6. Jain A, Pandita NN. Biochemical blood profile of normally cycling and PGF2 alpha treated subestrus crossbred cows. Indian J Anim Reprod. 1995;16:88-90.
7. Kumar S, Punniamurthy N. Estrus induction by supplementation of *Murraya koenigii* in anoestrus heifers. Reprod Indian J Anim. 2009;30(2):66–67.
8. Kumar S, Saxena A. Comparative studies on metabolic profile of anoestrus and normal cyclic Murrah buffaloes. Buffalo Bulletin. 2010;29(1):7-11.
9. Luktuke SN, Sharma C. Studies on the incidence of true anestrus in rural cattle and buffaloes. Indian Vet J. 1978;55:940-942.
10. Mahour SS, Nema SP, Shukla SP, Shrivastava N, Mehta HK. Biochemical profile of postpartum anoestrus and induced estrus crossbred cows. Indian J Field Vet. 2011;6(3):53-55.
11. McClure TJ. A nutritional cause of low non-return rates in dairy herds. Aust Vet J. 1965;41:199.
12. Morrow DA. Phosphorus deficiency and infertility in dairy heifers. J Am Vet Med Assoc. 1969;154:761.
13. Pariza KF, Alam J, Islam MR, Hossain MM, Awal MA. Investigation of hematological and biochemical profiles of anoestrus zebu cows. Bang J Vet Med. 2013;11(1):57-60.
14. Patil MD, Talvelker BA, Joshi VG, Deshmukh BT. Hematological studies in Murrah buffaloes. Indian Vet J. 1992;69:661-663.
15. Randel RD, Del Vecchio RP, Neuendorff DA, Peterson LA. Effect of alfaprostol on postpartum reproduction in Brahman cows and heifers. Theriogenology. 1988;29:657-670.
16. Singh J, Murray RD, Mshelia G, Woldehiwt Z. The immune status of the bovine uterus during the peripartum period. Vet J. 2008;175:301-309.
17. Singh J, Verma HK, Singh KB, Singh N. Incidence of reproductive disorders in dairy animals in different agroclimatic regions in Punjab. J Res. 2006;43(3):224-227.
18. Virmani M, Malik RK, Singh P, Dalal SS. Studies on blood biochemical and mineral profiles with the treatment of acyclicity in postpartum anoestrus Sahiwal cows. Haryana Vet. 2011;50:77-79.
19. White AJ, Dobson H. Effect of prostaglandin F2α on the fertility of cows after calving. Vet Rec. 1990;127:588.
20. Woollard KJ, Geissmann F. Monocytes in atherosclerosis: subsets and functions. Nat Rev Cardiol. 2010;7:77–86.
21. Yadav NK, Lohan JS, Singh B, Chand D. Studies on some serum constituents in anoestrous buffaloes. Indian J Anim Res. 1995;29(1):85-88.
22. Zaman MS, Ali CS, Ahmad KM. Comparative study of blood glucose, cholesterol, protein and urea contents in cyclic, non-cyclic and sub-oestrous lactating buffaloes. Pak Vet J. 1985;5(2):72-75.