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RSEARCH NOTE

Progrestrone profile in cyclic and non-cyclic animals *vis a vis* conceiving and non-conceiving animals

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The re-establishment of regular oestrus cycle after parturition in cows/ buffaloes is delayed for a variable period of time. The influence includes genetic, environment, nutritional status, milk yield, parity, breed, calving difficulties, ovarian disorders and inadequate amount of gonadotrophins. In recent years, considerable attention has been focused on reproduction endocrinology as a means to identify specific problems and to adopt therapeutic measures to augment bovine fertility.

Study on blood biochemical and hormonal characteristic of such clinically normal but anoestrus animal and their comparison with that of normally cycling heifers will help to understand the probable physiological reasons like deficiency, excess or other abnormalities of such characters in circulating blood causing anoestrus conditions. The physiological stress such as pregnancy, parturition, and lactation alter the homeostasis of the animals, particularly during late pregnancy the animals go under severe stress of bearing the foetus, supplying nourishment to the foetus besides maintaining it's own homeostasis. Similarly, immediately after parturition, the lactation stress continues throughout puerperium.

A total of 22 cows 8-10 years in their 3 to 5 parity were selected at Nandini Hospital Pajarapole, Surat for this study. After thorough clinical and per rectal examination of all animals for their reproductive status twice 10 days apart, they were divided in two groups *viz.*, cyclic and Non-cyclic/ anoestrus. All animals were fed common feeds and fodders uniformly as per routine farm feeding schedule.

Group I (Normal cyclic) :

These animals (n=12) were not given any treatment, but 5 were followed regularly form day of insemination till two months post breeding when pregnancy was confirmed per rectum.

Group II (Non-cyclic/Anoestrus cows-GnRH treatment):

These cows (n=10) that failed to exhibit any signs for previous 2-3 months and had smooth nonfunctional ovaries were supplemented with mineral mixture (Ovel Vet) @ 50g/day/head for 15 days and then treated with 0.02 mg GnRH (Receptal,5 ml) i/m. They were regularly followed afterwards and the animals coming in estrus were served. Pregnancy was confirmed on non return cases per rectum 60 days post A.I.

Blood collection :

The blood samples were collected through jugular venupuncture from each experimental animal in a glass vial (10ml capacity) containing heparin as an anticoagulant. Aliquots from each sample were made and stored in small vials of 1.8 ml each. (Sodium fluoride was used as preservative and Merthiolate was used as an antifungal agent). The plasma was stored at -20 C till analysis of parameters was carried out. The estimation of plasma glucose, total protein, cholesterol and triglycerides was carried out using standard kits and an auto analyzer.

The results obtained from the present investigation are summarized below :

Progestrone (ng/ml) :

Table 1 : Mean ± Standard Error Values for progesterone at different intervals for cyclic and non-cyclic animals

Category of Animal	Periods / Intervals post A I						
	I	II	III	IV	V	VI	VII
Conceiving	0.50	0.50	0.62	0.77	0.77	0.76	0.73
(C))	±	±	±	±	±	±	±
	0.10	0.11	0.10	0.10	0.09	0.13	0.11
Non-conceiving	0.42	0.81	1.28	2.03	2.38	2.29	2.46
(NC)	±	±	±	±	±	±	±
	0.08	0.26	0.37	0.89	0.90	1.04	0.16
Overall cyclic	0.47	0.63	0.87	1.25	1.44	1.40	1.45
G_1=C+NC	±	±	±	±	±	±	±
	0.06	0.12	0.18	0.18	0.42	0.47	0.52
Anoestrus (G_2)	0.29	1.1	1.07	1.99	2.07	2.53	2.57
	±	±	±	±	±	±	±
	0.003	0.13	0.20	0.29	0.47	0.42	0.64
G_1 vs G_2	*	**	**	**	**	**	**
C vs NC	*	*	**	*	**	*	**

Progesterone (ng/ml) values (Mean ± SE) for the different reproductive conditions were: cyclic animals: 1.91 ± 0.17; anoestrus animals: 0.65 ± 0.03; conceiving animals: 2.63±0.24 and non-conceiving animals: 0.91 ± 0.08 ng/ml (Table 1).

The values for progesterone differed significantly ($p<0.01$) between different groups. Progesterone is the main hormone for cyclicity in the animals. Luteal cells of the CLsynthesize them.(Hafez,1987) Progesterone profile taken over a period of time can give a clear idea of fertility status of the animal (Shah *et al.* 2002) Ovarian dysfunction were diagnosed through progesterone profile in Egyptian buffaloes by Barkawi and co workers in 1986 and in cows and buffaloes by Mahapatra and co workers in 1992. The fertility of the buffaloes was found to be closely related with the normal profile of progesterone (Sarvaiya *et al.,* 1991. Krishna Kumar and Subramaniam (2001) studied progesterone concentrations of fertile and non-fertile oestrus induced cows. They observed that the cows with higher progesterone levels prior to treatment became pregnant.

The values of progesterone recoded by in the present study also supports the above observations that progesterone levels tend to increase in the animals that had conceived while they remained lowered in the animals that failed to conceive (Erb *et al.,* 1976).

Lukaszewska and Hansel (1980) reported that Plasma Progesterone concentrations were significantly ($P < 0.05$) higher in pregnant than in non-pregnant and cyclic animals between days 10 and 18. This indicated that the embryo might be producing one or more luteotrophic substances that stimulated increased progesterone secretion by the CL, beginning as early as day 10 of pregnancy.

Jain and Pandey (1992) found that plasma progesterone concentration increased from day 1 to a peak of 4.0 ng/ml on day 11, after which the level decreased in non-pregnant buffalo heifers and increased in pregnant heifers. On day 22, progesterone concentration in pregnant and non-pregnant heifers averaged 6.0 and 0.8 ng/ml, respectively which are in complete agreement with our observations.

In the present investigation significant difference was found in the level of progesterone between the groups.

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