

Plasma calcium, inorganic phosphorus and magnesium levels in buffaloes afflicted with metritis*

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ABSTRACT

Plasma levels of calcium, inorganic phosphorus and magnesium during postpartum period were estimated in 10 healthy and 10 buffaloes suffering from metritis. The buffaloes were selected randomly . Mean plasma calcium levels were higher in healthy than in affected buffaloes (9.80 ± 0.28 vs 7.57 ± 0.83 mg%, $P > 0.05$). No difference in plasma level of inorganic phosphorus (5.52 ± 0.74 vs 4.65 ± 0.41 mg %) and magnesium was observed. Serum calcium level was lower ($P < 0.05$) in affected buffaloes.

Key words: Buffalo, Calcium, Inorganic phosphorus, Magnesium, Metritis.

INTRODUCTION

Minerals play an important role in the promotion of action of hormones and enzymes at sub-cellular levels in an integrated fashion (Dhoble and Gupta, 1986). The influence of these minerals on certain enzyme systems may hamper reproductive efficiency. Deficiency of these minerals and some of the trace elements have been found to be associated with anoestrus (Jain and Madan, 1984), subnormal fertility and postpartum reproductive disorders (Dabas *et al.*, 1987) in dairy animals. Postpartum metritis is one of the important reproductive disorders which affects fertility by increasing calving interval. The present investigation was carried out to study the levels of calcium, inorganic phosphorus and magnesium in buffaloes with postpartum metritis, and to compare it with the values obtained in postpartum healthy buffaloes.

MATERIALS AND METHODS

The study was conducted on 10 healthy buffaloes and 10 buffaloes suffering from metritis at dairy farms in the near by areas of Durg district of Chhattisgarh. These animals were selected randomly. All the animals were in postpartum period of 2nd to 5th lactation. Blood samples (10 ml) were collected aseptically from each animal in heparinized vials by Jugular vein puncture. Plasma was separated and transferred into sterilized labeled vials and stored at -20° C, till estimation.

Plasma calcium levels were estimated by colorimetric method (Morin, 1974) and inorganic phosphorus by modified Gomorri's method (Gomorri, 1942). Plasma magnesium levels were estimated by Titan yellow method (Neill and Nelly, 1976). The mean values of calcium, inorganic phosphorus and magnesium were compared using Fisher t-test.

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RESULTS AND DISCUSSION

Plasma mineral levels in healthy buffaloes and buffaloes with metritis are shown in Table 1. The mean plasma calcium level in buffaloes with the given reproductive disorder was significantly lower ($P < 0.05$) than healthy buffaloes (7.57 ± 0.83 vs 9.80 ± 0.28 mg %, $P > 0.05$). Findings of the present study are in agreement with that of Mateus and Costa (2001) and Shah *et al.* (2003). Calcium plays an important role in sensitizing tubular genitalia for the action of hormones. The low calcium level in affected animals may be associated with the atony of the uterus (Maree, 1986) which causes delayed uterine involution and thus increases calving interval.

The mean level of inorganic phosphorus in the buffaloes having metritis was lower than healthy buffaloes (4.65 ± 0.41 vs 5.52 ± 0.74 mg %), but the difference was non significant. Mateus and Costs (2001) and Shah *et al.* (2003) agree with the present findings as they have also reported non-significantly low levels of inorganic phosphorus in such animals. The most prevalent deficiency affecting reproduction appears to be due to lack of phosphorus (Salisbury and Vandermark, 1961). Marginal deficiency of phosphorus is sufficient to cause disturbances in pituitary-ovarian axis, which affects the release and action of hormones resulting in infertility.

Mean plasma magnesium level was higher in sick buffaloes in comparison to healthy buffaloes (3.38 ± 0.14 vs 2.85 ± 0.2 mg %), although the difference was non-significant. Quayam *et al.* (1988) found no difference in plasma magnesium levels between healthy and infertile buffaloes, but Jain (1993) reported non-significantly higher levels of magnesium in affected animals which may be due to lower levels of calcium and inorganic phosphorus.

Table 1. Calcium, inorganic phosphorus and magnesium levels in normal and postpartum metritic buffaloes.

Animal No.	Plasma mineral					
	Calcium (mg %)		Inorganic phosphorus (mg %)		Magnesium (mg %)	
	Healthy	Affected	Healthy	Affected	Healthy	Affected
1.	8.71	6.06	7.77	4.18	1.63	4.16
2.	10.09	4.19	4.63	5.19	3.90	3.40
3.	10.80	2.62	9.05	4.70	2.57	3.33
4.	9.15	8.42	4.49	5.57	2.74	2.50
5.	10.10	8.22	4.70	3.13	2.08	2.93
6.	8.95	10.40	7.30	6.00	2.89	3.53
7.	11.60	10.00	3.99	7.12	3.06	3.38
8.	9.06	10.40	4.45	3.44	3.37	3.32
9.	9.49	8.66	7.67	3.51	2.86	3.41
10.	10.10	6.76	1.24	3.37	3.41	3.85
Mean \pm S.E.	9.80 ± 0.28	$7.57 \pm 0.83^*$	5.52 ± 0.74	4.65 ± 0.41	2.85 ± 0.20	3.38 ± 0.14

*Significant ($P < 0.05$)

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NEWS



L-R I. Dr. P. Margoob Hussain (Professor of Gynae. & Obst. (UAS); Dr. M.N. Sheelavanter (Vice-Chancellor, UAS, Bangalore; Shri Bhairon Singh Shekhawat (Hon'ble Vice President of India)

Dr. P. Margoob Hussain, Professor of Gynaecology & Obstetrics has been awarded "Best Extension Worker Award" by the University of Agricultural Sciences, Bangalore in its 41st Convocation held on Friday 13th April, 2007. This award has been instituted by M/S Zuari Industries Limited and presented by the honorable Vice President of India Shri Bhairon Singh Shekhawat. The award carries a cheque of Rs. 10,000/-, Citation and Memento.