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Short communication

Levels of serum free thyroid hormones and cortisol in estrus, anoestrus and repeat breeding buffaloes

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ABSTRACT

No significant change in the values of serum protein and free thyroid (fT3 and fT4) hormones was observed in estrus, anoestrus and repeat breeding buffaloes. The serum cortisol levels though, at a low ebbs, but conspicuously higher in the oestrus than in the anoestrus and repeat breeding buffaloes.

Key Words: Buffaloes, serum free thyroid hormones, cortisol, reproductive disorders

Thyroid hormones (tri-iodothyronine T3 and thyroxin T4) are thought to be necessary for normal secretion and utilization of gonadotropins and gondal hormones (Dalvi *et al.*, 1995). The levels of free T3 and T4 depend upon the thyroid binding proteins (TBP). Even though the secretion of thyroid hormones are normal, the levels of free T3 and T4 get increased during pregnancy and ketosis (Dalvi *et al.*, 1995). The cortisol has been reported to inhibit the release of thyroid hormones (Rijnberk and Mol 1997).However, systematic studies are scarce on these hormones during estrus, anoestrus and in repeat breeding buffaloes. In view of this scientific gap, the present work was under taken to monitor the serum levels and association of these hormones in oestrus (n=8), anoestrus (n=6) and repeat breeding (n=6) buffaloes belonged to the private dairy farms around Jabalpur. The blood samples from these animals were collected and sera separated out for estimation of free tri-iodothyronine (fT3), thyroxine (fT4) and cortisol using microtitre plates of ELISA kits. The kits for serum free thyroid hormones were procured from Monobind Inc., USA and for serum cortisol from Equipar Sri, Italy. The validity parameters of ELISA for fT3, fT4 and cortisol were tested as per literature (*Ibid*). The serum protein of all the samples was estimated by Biuret method (Weichselboum, 1946).

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The values of serum fT3 (pg/ml) and fT4(ng/ml) in oestrous, anoestrous and repeat breeding buffaloes were 4.34±0.22, 4.40±0.23, 4.0±0.74and 0.54±0.14, 0.63±0.23, 0.55±0.15,respectively. The values of serum cortisol in the similar conditions were 19.33±3.53, non-detectable to 10.0 and non-detectable to 25.0ng/ml, respectively.The values of serum proteins were 6.4±0.34, 6.91±0.33 and 6.8±0.16g% in oestrus, anoestrus and repeate breeding buffaloes, respectively. Similar observations without changes in the levels of fT3 and fT4 were also recorded, which seemed to be dependent upon the thyroid binding proteins. Deshmukh and Mantri (1997) recorded that there was no change in the total plasma T3 and T4 in different stages of lactation.

The inconsistent variations of serum cortisol level were recorded in anoestrus and repeat breeding buffaloes from the point of nadir to 10.00 and 25.00 ng/ml of serum, respectively, while in oestrus buffaloes, a consistent value was recorded to the level of 19.33±3.53ng/ml of serum. These changes might be due to the physiological stress during lactation and oestrus (Gupta *et al.*,1995) and varying pathological stress in anoestrus and repeate breeding buffaloes.

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