ESTRUS INDUCTION BY SUPPLEMENTATION OF *MURRAYA KOENIGII* IN ANESTRUS HEIFERS

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ABSTRACT

The effect of *Murraya koenigii* supplementation on estrus induction in anestrus heifers was studied. Twenty crossbred heifers (2-3 years) diagnosed for anestrus condition were selected for the study. The animals in the treatment group (n=10) were supplemented with 100 gms of fresh *Murraya koenigii* leaves daily (P/O) for 30 days. Animals in the control group (n=10) were not given any treatment. Serum calcium (Ca) and phosphorus (P) levels were estimated on the day of initiation (Day1) and completion (Day 30) of the experiment. In the treatment group, six (60%) out of ten heifers exhibited estrus within a mean of 28.0 ± 2.56 days after initiation of treatment and in the control group only one heifer (10%) exhibited estrus. There was a non-significant increase in the serum Ca and P levels and improvement in Ca:P ratio in the treatment group (11.78 ± 2.41, 6.36 ± 1.66 and 1.90: 1 respectively) when compared with control animals (9.32 ± 2.61, 5.84 ± 1.10 and 1.59: 1 respectively). Supplementation of *Murraya koenigii* leaves (curry leaves) at the rate of 100 gms / day daily for 30 days improved the serum Ca and P levels and resulted in induction of estrus in anestrus heifers.

Key words: Anestrus heifers, *Murraya koenigii* leaves, Estrus induction

Anestrum was found to be an important cause for infertility next to under developed genitalia among the rural heifers and it could be attributed for poor feeding management (Satheshkumar and Punniamurthy, 2003). Tiwari *et al.* (2001) stated that cyclicity in anestrus heifers could be improved with deworming, mineral supplementation and better feeding. *Murraya koenigii* leaves (curry leaves) are rich sources of minerals, especially calcium, and has the potential to augment the ovarian function in terms of follicular development in rats (Mehrotra *et al.*, 2004). Previously Hegde *et al.* (2002) reported 80 per cent conception among repeat breeder cows with administration of powdered curry leaves. The present paper places on record the effect of supplementing *M. koenigii* leaves on estrus induction in anestrus heifers.

Twenty crossbred heifers (2-3 years) maintained under traditional rural husbandry practices, diagnosed for anestrus condition (normally developed genitalia with smooth ovaries) were selected for the study. Before initiating the experiment all the animals were dewormed (Fenbendazole bolus; 5 mg/ kg BW). The animals in the treatment group (n=10) were supplemented with 100 gms of fresh *M. koneigii* leaves daily (P/O) for 30 days. Animals in the control group (n=10) were not given any treatment. Blood was collected on the day of initiation (Day1) and completion (Day 30) of the experiment. Serum Calcium (Ca) and Phosphorus (P) levels were estimated by colorimetric method using commercial kit. The animals were monitored regularly for estrus signs during the course of experiment and also for two weeks after completion of the experiment. Sero concentrations of Ca and P in animals were statistically analysed as described by Snedcor and Cochran (1989).

In the treatment group, six (60%) out of ten heifers exhibited estrus within a mean of 28.0 ± 2.56 days after initiation of treatment, of which two heifers showed intense estrus signs and four animals exhibited signs of moderate intensity. In the control group, only one heifer (10%) exhibited estrus. Mehrotra *et al.* (2003, 2004) reported early onset of puberty in rats supplemented with ethanolic extracts of *M. koenigii* and

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observed higher steroidogenic activity, primarily oestradiol 17-α, in their ovaries. They suggested that the higher steroidogenic activity of the extract would have stimulated granulosa cells mitosis in the developing follicles, thereby potentiating the follicular development. In the present study, though endocrinological parameters were not studied, it could be hypothesized that the above factors might have stimulated the follicular development and ovarian function in M. koenigii supplemented anestrus heifers.

Moreover, curry leaves were very rich source of minerals, especially calcium, phosphorus, iron etc. (Shantala and Prakash, 2005). The importance of Ca and P in animal reproduction had been documented by many researchers (Chandolia *et al.,* 1987, Ali *et al.*, 1991). In our study, the mean serum Ca and P concentrations (mg %) and Ca: P ratio of the anestrus heifers on the day of initiation of study (Day 1) were 9.29 ± 2.34, 5.79 ± 0.95 and 1.61: 1 respectively, in concurrence with the findings of Chandolia *et al.* (1987). At the end of experimental period (Day 30), the respective values in the treatment group were 11.78 ± 2.41, 6.36 ± 1.66 and 1.90: 1 and in the control animals were 9.32 ± 2.61, 5.84 ± 1.10 and 1.59:1. There was a significant increase ($P < 0.05$) in the serum Ca and non-significant improvement in P levels and Ca: P ratio in the treatment group after supplementation with curry leaves when compared with control animals. Satishkumar and Sharma (1991) stated that disturbed Ca: P ratio and deficiency of these minerals could be accounted for pituitary and gonadal dysfunction in anetrus heifers. Ca and P also influence the animals' ability to utilize other micro minerals and they have sensitizing action on reproductive hormones through various enzyme systems (Dutta *et al.*, 2001). Thus the supplementation of curry leaves would have contributed for the improved serum Ca and P levels and supported the induction of ovarian activity in anestrus heifers.

It could be concluded that the steroidogenic activity and rich mineral source of *M. koenigii* leaves would have potentiated follicular development, improved sero concentrations of essential minerals and thereby induced estrus in anestrus heifers.

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