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Effect of Murraya Koenigii and Aegle Marmelos in Management of Bovine Anoestrus Under Field Conditions

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ABSTRACT

Total 33 bovines with the history of not exhibiting the signs of estrous were screened by per rectal examination to rule out the anoestrus condition and included in the present study. The selected animals were divided into three groups. Animals in Group 1 (n=14) were supplemented with grinded dried leaf powder of Murraya koenigii @ 210mg/kg and Aegle marmelos @ 270 mg/kg for 9 days orally; Group 2 (n=12) were supplemented with commercially available oral herbal estrus inducer and Group 3 (n=07) were kept as control. All the animals were monitored for expression of estrus and the animals not exhibited estrus within 30 days of the treatment were considered as not responding to the treatment. Responded animals were bred by artificial insemination and observed for estrus induction response, estrus induction interval and conception rate at induced estrus. Estrus induction response was significantly ($p<0.05$) higher in group 1 (85.70%) followed by group 2 (33.30%) and group 3 (28.60%). Estrus induction interval was shortest in group 2 (13.25±5.36 days) followed by group 1 (20.67±2.11 days) and group 3 (27.50±1.50 days). Conception rate at induced estrus was higher in group 1 (33.30%) followed by group 2 (25.00%) and group 3 (0.00%). In conclusion, bovine anoestrus conditions could be effectively managed by feeding of shed dried powder of Murraya koenigii and Aegle marmelos.

Keywords: Aegle marmelos, Bovine anoestrus, Conception rate, Estrus induction response, Murraya koenigii

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INTRODUCTION

Among various reproductive disorders in cattle and buffaloes, anoestrus is one of the serious conditions resulting in severe economic loss to dairy farmers. Various reproductive hormones, commercially available herbal preparations, supplements of mineral mixture are mainly used to overcome the condition. India is a rich source of medicinal plants and herbal preparations prepared from these plants may offer a potent alternative to treat the anoestrus, as the

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use of reproductive hormones (Degwekar *et al.,* 2006; Chaudhari *et al.,* 2012) is costly and needs veterinary supervision. Ethno-veterinary medicines *viz.,* Mitha neem/ Curry Patta and Bel/Bili are reported to have beneficial effects on anoestrus condition of dairy animals (Mehrotra *et al.,* 2005; Satheshkumar and Punniamurthy, 2009; Dutt, *et al.,* 2010; Das *et al.,* 2016; Kumar *et al., 2*016; Kumawat *et. al.,* 2016). Both the plants contain various phyto-constituents that could be utilized for the treatment of various ailments in human and animal species (Rautela and Katiyar, 2023). Considering the above, the present research was conducted to study the efficacy of Curry Patta (*Murraya koenigii*) and Bili (*Aegle marmelos*) to manage the anoestrus in bovines under field conditions.

MATERIALS AND METHODS

The fresh green leaves of Curry Patta (*Murraya koenigii*) and Bili (*Aegle marmelos*) were collected from their natural habitat. The green leaves were shed dried at room temperature and grinded in a mixer grinder. The powder was stored in closed plastic bags at room temperature till further packing after individual dose calculation. Total 33 bovines with the history of not exhibiting the signs of estrous were screened by rectal examination to rule out the anoestrus condition included in the present study. These bovines were divided into three groups. Animals in Group 1 (n=14) were supplemented with grinded dried leaf powder of Curry Patta (*Murraya koenigii*) @ 210mg/kg and Bili (*Aegle marmelos*) @ 270mg/kg orally for 9 days. The doses of Murraya koenigii and Aegle marmelos was calculated as per the Dutt *et al.* (2011). Animals in Group 2 (n=12) were supplemented with commercially available oral herbal estrus inducers. While, animals in Group 3 (n=07) were kept as untreated control. All the bovines were monitored by their owners for expression of estrus. The animals not exhibited estrus within 30 days of the treatment were considered as not responding to the treatment. Responded animals were bred by artificial insemination. Based on the observations, estrus induction response, estrus induction interval and conception rate at induced estrus were recorded. Estrus induction response (%) and conception rate (%) at induced estrus were analyzed by chi-square test. Time interval for estrus induction (mean±SE) between the three groups was compared by Kruskal-Wallis test. Data as mean±SE and significance was set at 95%.

RESULTS AND DISCUSSION

In the current experiment, the estrus induction response was significantly higher ($p<0.05$) in Group 1 (85.70%) compared to Group 2 (33.30%) and Group 3 (28.60%). These findings align with previous studies by Das *et al.* (2016) and Kumawat *et al.* (2016), who reported the beneficial effects of *Aegle marmelos* and *Murraya koenigii* plant leaves in inducing estrus in delayed pubertal heifers. Their research demonstrated significantly higher estrus induction rates in treatment groups receiving *M. koenigii and A. marmelos* compared to control groups. Similarly, Baitule *et al.* (2016) observed superior estrus induction responses in buffalo heifers supplemented with a combination of *A. marmelos* and *M. koenigii* (75%), compared to *A. marmelos* alone (33.33%), *M. koenigii* alone (50.00%) and control groups (33.33%).

The estrus induction interval in the present experiment was shortest in Group 2 (13.25±5.36 days), followed by Group 1 (20.67±2.11 days) and Group 3 (27.50±1.50 days). Consistent with these findings, *Aegle marmelos* and *Murraya koenigii* combinations have been reported to induce estrus at shorter intervals, such as 9.33 days in anoestrus buffaloes (Dutt *et al.,* 2011) and 8.8 days in delayed pubertal heifers under field conditions (Das *et al.,* 2012a). However, under farm conditions, the same treatment induced the estrus at a longer interval of 22.8 days in delayed pubertal heifers (Das *et al.,* 2012c). Similarly, Baitule *et al.* (2016) found shorter estrus induction intervals in buffalo heifers supplemented with a combination of *A. marmelos* and *M. koenigii* (14.50 days) compared to *A. marmelos* alone (19.50 days), *M. koenigii* alone (16.33 days) and control groups (26.50 days). Variations in the mean interval to estrus onset among studies may be attributed to differences in individual animal conditions, seasonal influences and the geographic locations of the experiments.

The conception rate at induced estrus was highest in Group 1 (33.30%), followed by Group 2 (25.00%) and Group 3 (0.00%) in the present experiment. These findings align with those of Das *et al.* (2016) and Kumawat *et al.* (2016), who reported higher conception rates in groups treated with *Murraya koenigii* and *Aegle marmelos* compared to control groups. Additionally, under field conditions, *A. marmelos* and *M. koenigii* administered in combination resulted in comparable conception rates in anoestrus buffaloes (Dutt *et al.,* 2011) and heifers (Das *et al.,* 2012a). Similarly, Baitule et al. (2016) observed higher conception rates in buffalo heifers supplemented with a combination of *A. marmelos* and *M. koenigii* (75.00%) compared to supplementation with *A. marmelos* alone (50.00%), *M. koenigii* alone (66.67%) and control groups (50.00%). Notably, higher pregnancy rates have been reported under farm conditions (Das *et al.,* 2012b,c; Kumar *et al.,* 2012).

CONCLUSION

The combination of *Murraya koenigii* and *Aegle marmelos* demonstrates significant potential for inducing estrus in bovines. The anoestrus condition in crossbred cows can be effectively managed by administering shed-dried powder of *Murraya koenigii* @ 210 mg/kg body weight and *Aegle marmelos* @ 270 mg/kg body weight, once daily for a duration of 9 days.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

Baitule, M.M., Gawande, A.P., Kumar, U., Sahatpure, S.K., Patil, M.S. and Baitule, M.M. (2016). Effect of *Aegle marmelos* and *Murraya koenigii* in treatment of delayed pubertal buffaloes heifers. *Vet. World*, **9**(12): 1375-1380.

Chaudhari, C.F., Suthar, B.N., Sharma, V.K., Dabas, V.S., Chaudhari, N.F. and Panchsara, H.H. (2012). Estrus induction and fertility response in delayed pubertal Kankrej heifers treated with Norgestomet ear implant. *Vet. World*, **5**: 453-458.

Das, G.K., Mehrotra, S., Kumar, B., Jan, M.H., Pande, M., Singh, S.K., Khan, T.A., Agarwal, S.K. and Uma Shankar. (2012a). Pattern and estrus induction response in delayed pubertal buffalo heifers treated with a combined treatment of *Murraya koenigii* and *Aegle marmelos*. In: National symposium of XXVIII Annual Convention of the Indian Society for Study of Animal Reproduction. Khanapara, Guwahati, India. pp. 50.

Das, G.K., Mehrotra, S., Narayanan, K., Kumawat, B.L., De, U.K. and Khan, T.H. (2016). Estrus induction response and fertility performance in delayed pubertal heifers treated with *Aegle marmelos* and *Murraya koenigii*. *J. Anim. Res.,* **6**: 151-156.

Das, G.K., Mehrotra, S., Jan, M.H., Kumar, B., Singh, S.K., Kumar, P. and Khan, T.A. (2012b). Augmentation of reproductive performance in delayed pubertal heifers using area specific mineral mixture and medicinal plants under farm condition. In: National symposium of XXVIII Annual Convention of the Indian Society for Study of Animal Reproduction. Khanapara, Guwahati, India. pp. 51.

Das, G.K., Mehrotra, S., Kumar, B., Jan, M.H., Pande, M., Singh, S.K., Kumar, H., Khan, T.A., Agarwal, S.K. and Uma Shankar. (2012c). Estrus induction and fertility response after a combined treatment of *Murraya koenigii* and *Aegle* marmelos in delayed pubertal heifers. In: National symposium of XXVIII Annual Convention of the Indian Society for Study of Animal Reproduction. Khanapara, Guwahati, India. pp. 49.

Degwekar, Y.G., Sarvaiya, N.P., Suthar, B.N., Shah, R.M., Chaudhary, C.F., Brahmkshtri, K.G. and Derashri, H.J. (2006). Influence of GnRH treatment on service period in buffaloes. *Ind. J. Anim. Reprod.,* **27**(2): 86 – 88.

Dutt, R., Mehrotra, S., Hoque, M., Uma, Shanker, Singh, G., Agarwal, S.K., Das, G.K. and Singh, S.K. (2010). Effect of *Murraya koenigii* and *Aegle marmelos* combination on resumption of fertility in anestrous goats. *J. Appl. Anim. Res.,* **38**: 275-278.

Dutt, R., Mehrotra, S., Shanker, U. and Singh, G. (2011). Effect of *Murraya koenigii* and *Aegle marmelos* feeding on anestrus buffaloes. *Ind. J. Anim. Reprod.,* **32**(1): 47-49.

Kumar, B., Das, G.K., Mehrotra, S., Chaudhary, J.K., Singh, Vijay, Mishra, S.K. and Saxena, A. (2012). Estrus induction response and pregnancy rate in delayed pubertal heifers treated with herbal plants. In: National symposium of XXVIII Annual Convention of the Indian Society for Study of Animal Reproduction. Khanapara, Guwahati, India. pp. 43.

Kumar, B., Sachan, V., Kumar, A., Singh, V., Das, G.K. and Saxena, A. (2016). Effect of supplementation of *Aegle marmelos* and *Murraya koenigii* on the follicular development in delayed pubertal Sahiwal heifer. *J Anim.Res.,* **6**(6): 1047-1052.

Kumawat, B.L., Das, G.K., Narayanan, K., Mehrotra, S., Prasad, J.K., Ghosh, S. K. and Kumar, H. (2016). Effect of *Aegle Marmelos* and *Murraya Koenigii* on estrus induction, conception and calving rate in delayed pubertal heifers under field condition. *Ind. J. Anim. Reprod.,* **37**(2): 17-19.

Mehrotra, S., Singh, S.K., Uma Shanker and Agarwal, S.K. (2005). Effect of certain indigenous medicinal plants on ovarian hormone profile and reproductive performance in anoestrus cattle. *Ind. J. Anim. Reprod.,* **26**: 20-23.

Rautela, R. and Katiyar, R. (2023). *Aegle marmelos* and *Murraya koenigii*: The wonder plants against bovine infertility. *Ind. J. Anim. Sci.,* **93**(1): 5–9.

Sathishkumar, S. and Punniamurthy, N. (2009). Oestrus induction by supplementation of *Murraya koenigii* in anoestrus heifers. *Ind. J. Anim. Reprood.,* **30**: 66-67.