Effect of dinoprost and cloprostenol on serum nitric oxide and corpus luteum blood flow during luteolysis in ewes

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Abstract:

In this study we compared the effect of dinoprost and cloprostenol on changes of corpus luteum blood flow during luteolysis. Ten nonlactating cyclic ewes were synchronized with double PGF2α injections 11 days apart. At Day 10, the animals were classified into 2 groups and received the third dose of PGF2α after confirmation of the presence of a mature CL. The first group received (12.5 mg/im) dinoprost and the second group received (250 μg/im) cloprostenol. A color Doppler ultrasound scan was performed by the same operator according to the following timeline: 0, 0.5, 1, 2, 4, 6, 12, and 24 hours, then every 24 hours until Day 4). The size, morphology, and blood flow of the CL was evaluated during the regression. The results showed that regression of the CL did not differ between the dinoprost and cloprostenol groups. There was no significant effect on diameter of the CL in both groups, though the size of the CL decreased gradually and slowly. Pretreatment progesterone concentration did not differ between groups. The results showed that the nitric oxide level was significantly increased within half an hour after the dinoprost treatment, and was significantly decreased in the cloprostenol group after half an hour. The blood velocity was increased significantly half an hour after the dinoprost treatment and it was decreased in the cloprostenol-treated group. In conclusion, both cloprostenol and dinoprost affect CL by controlling the nitric oxide level and blood supply of the CL via different mechanisms to induce luteolysis.

Keywords:

Cloprostenol; Dinoprost; Progesterone; Doppler; Nitric oxide

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