

Use of estradiol benzoate to limit triplets in a low dose FSH model of twinning

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Research

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Abstract

Background: Estrogen could limit the nondominant follicles development after the first deviation by inhibition of the FSH secretion through the negative feedback loop, which ensure that the number of dominant follicles would be in a moderate level.

Methods: The objective of the present study was to evaluate the effect of estradiol benzoate (EB) on inhibiting the development of nondominant follicles and inducing twin calves in beef heifers. Beef heifers were synchronized using an estradiol (E2)- plus- progesterone (P4)- based and superovulated using small dose follicle- stimulating hormone (FSH) protocol. From days 6.5 to 7.5 every heifer was treated with variety dose of estradiol benzoate (EB) for 3 times with 12 h intervals to eliminate the excess number of dominant follicles.

Results: The diameters of the two largest follicles (F1 and F2) continually increased from day 3.5 to day 10. However, the growth rate was constrained by exogenous EB, and the degree of suppression was greatest in the 0.5 mg EB treatment compared with other treatments. As a result, the number of large follicles (≥ 10 mm) was also reduced along with the dose of EB increased. The double/triple ovulations rate, pregnancy rate and twin were all demonstrate the highest in 0.2 mg EB treatment group than in other treatments.

Conclusions The present study describes an efficient protocol that can be used to stimulate the development of a small number of dominant follicles i.e. 2-3 at the deviation stage through a FSH and 0.2 mg EB combine treatment, which can further result in the production of two calves. The appropriate dose of EB treatment during FSH induced superovulation procedure could limit the number of dominant follicles development and eventually increase the calf production efficiency.

Full Text

Due to technical limitations, full-text HTML conversion of this manuscript could not be completed. However, the manuscript can be downloaded and accessed as a PDF.

Figures

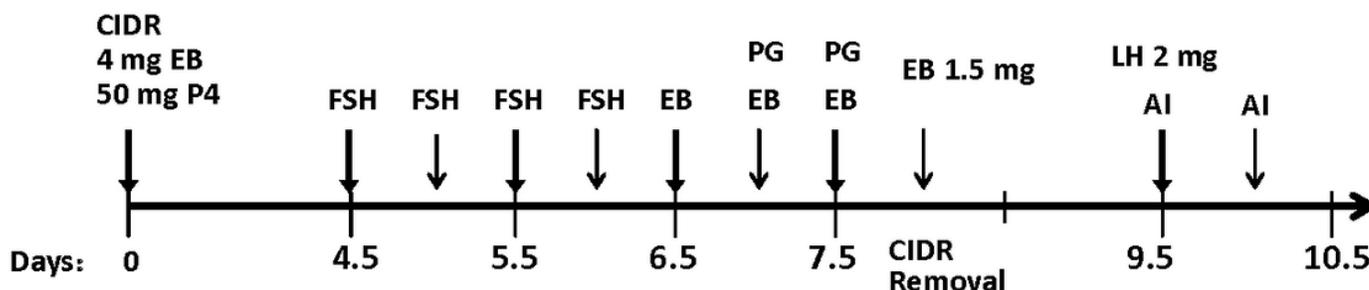


Figure 1

Diagram of the experimental protocol.

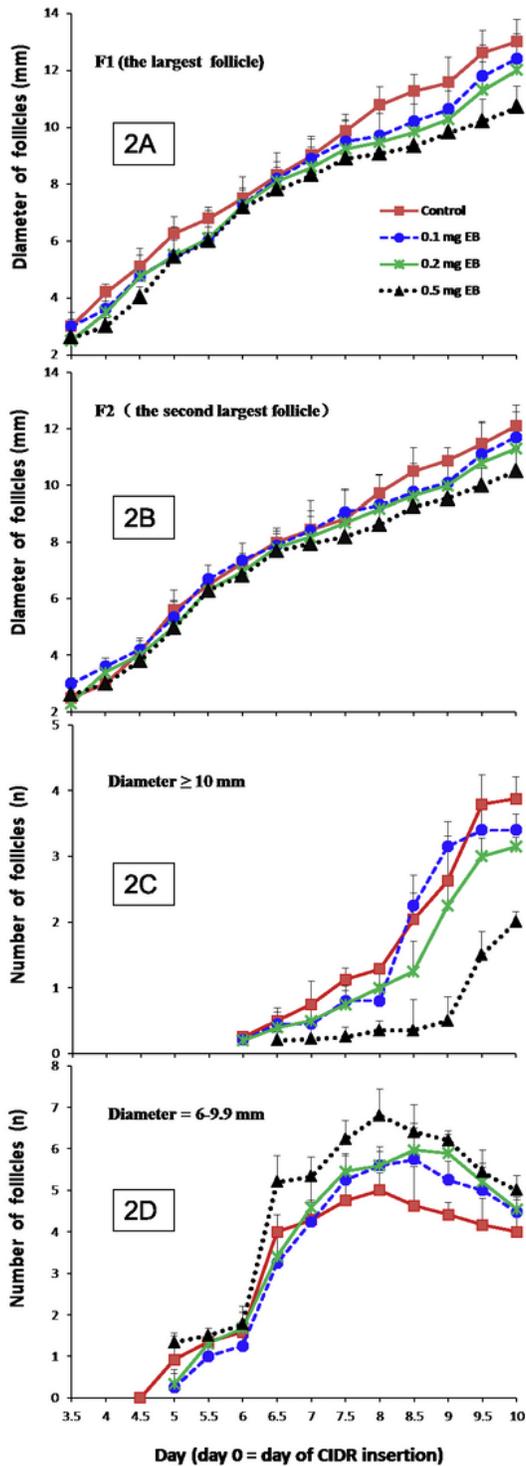


Figure 2

Effects of treatments with different doses of EB on the development of F1 (the largest follicle, 2A) , F2 (the second largest follicle, 2B), the number of large-sized follicles (diameter ≥ 10 mm, 2C) and the number of medium-sized follicles (diameter = 6-9.9 mm, 2D).

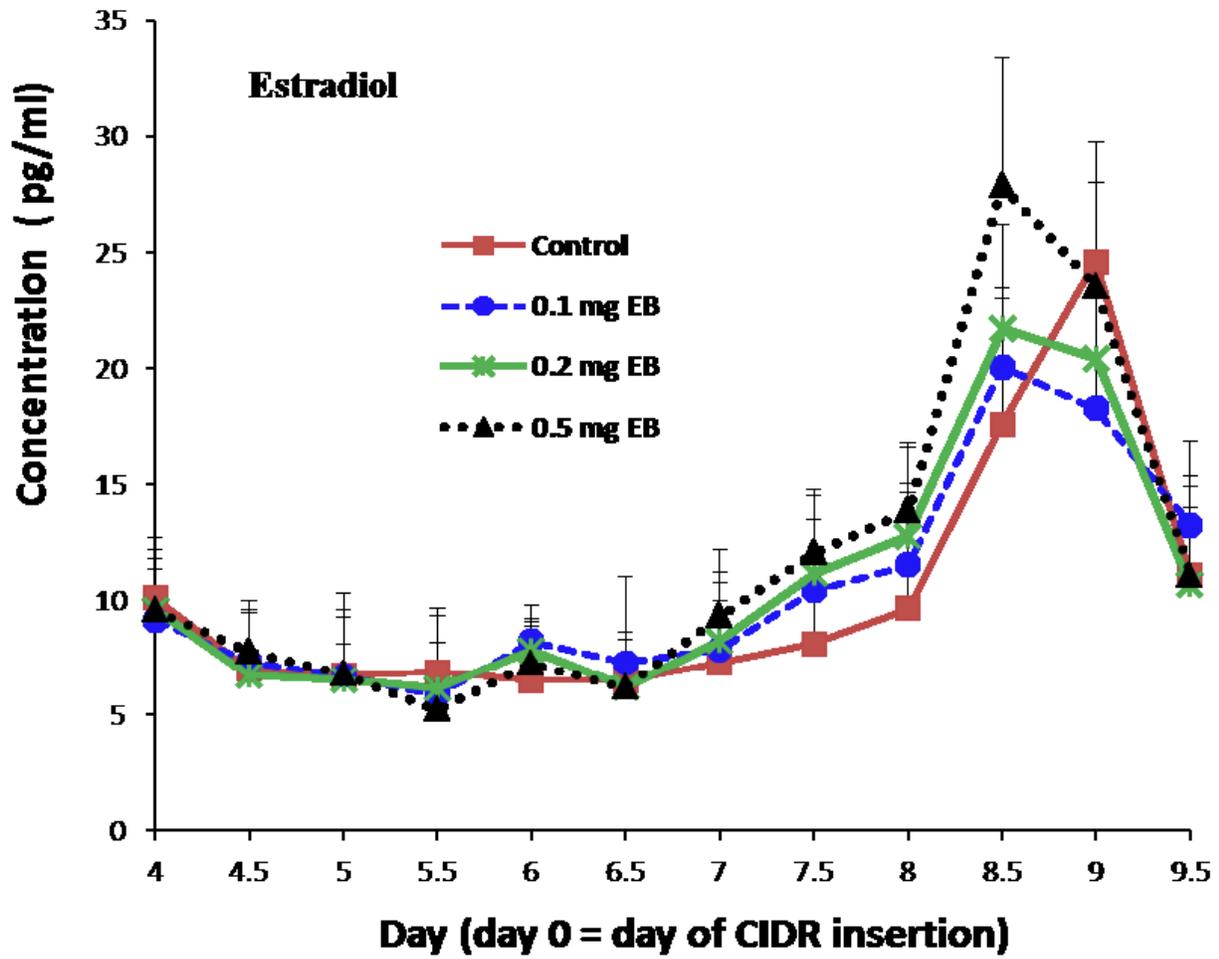


Figure 3

Dynamic change in serum estradiol concentration for treatments with different doses of EB.