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***In vitro* toxicological effects of Fumonisin B₁ and Beauvericin on bovine granulosa cells**

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ABSTRACT

Fumonisin B₁ (FB₁) and beauvericin (BEA) are fusariotoxins found to co-exist in food and feed commodities. The aim of this study is to evaluate the individual and combined effects of FB₁ and BEA on bovine granulosa cell proliferation and steroid production. Granulosa cells (GC) from small bovine follicles (1-5 mm) were cultured for 48 hours in 10% fetal bovine serum followed by 48 hours in a serum-free medium containing 500 ng/ml of testosterone (as an estradiol precursor), 30 ng/ml of FSH and 30 ng/ml of IGF-I with and without FB₁ (3 μM) and BEA (3 μM). At the end of the experiment, the numbers of GC were determined using a Coulter counter (Beckman Coulter, USA) and concentrations of progesterone and estradiol in the culture medium were determined by radioimmunoassay. FB₁ and BEA, both individually and in combination, showed an inhibitory effect ($P < 0.05$) on GC proliferation. The number of GC decreased by 17.7%, 54.2% and 61.0% after exposure to FB₁ (3 μM), BEA (3 μM) and FB₁ (3 μM) plus BEA (3 μM) respectively. FB₁ (3 μM) had no effect ($P > 0.05$) on estradiol and progesterone production, whereas BEA (3 μM), both alone and in combination with FB₁ (3 μM), was found to decrease ($P < 0.001$) the production of both steroids drastically. In conclusion, this *in vitro* study indicates that FB₁ and BEA, both individually and in combination, may affect GC proliferation to different extents and shows the drastic inhibitory effects of BEA on steroid production.

REFERENCES

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