

Synergistic Effects Of Insulin-Like Growth Factor ii (IGF-II) and Leutinizing Hormone (LH) on Steroid Hormone Secretion By Cultured Bovine Granulosa Cells

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Abstract

The synergistic effects of insulin-like growth factor II (IGF-II) and leutinizing hormone (LH) and the effect of IGF-II alone on production of progesterone (P₄) and estradiol (E₂) by bovine granulosa cells (GC) cultured in vitro were determined in this study. Bovine granulosa cells obtained from ovaries of slaughtered cows were cultured for 4 days in carbon (IV) dioxide (CO₂) incubator at 37°C, 5% CO₂ in atmospheric air and 100% relative humidity, using tissue culture medium 199 (TCM 199) as culture medium. The medium was changed on the second day and testosterone added to serve as substrate for estradiol production. Insulin growth factor II (IGF-II) alone, or IGF-II + LH were added into the culture medium at 0, 0.1, 1.0, 10, 50, and 100 (ng/ml) levels of inclusion. Concentrations of progesterone and estradiol 17β produced were measured by radioimmunoassay. The results obtained showed that IGF-II alone and IGF-II + LH had significant effects on progesterone and estradiol produced by cultured granulosa cells. The result also revealed higher values of progesterone (4.78 ng/ml) and estradiol 17β (9.68 pg/ml) when IGF-II (10 ng/ml) and LH (50 ng/ml) were included together in the culture medium as compared with progesterone value (1.84 ng/ml) and estradiol 17β value (3.57 pg/ml) when IGF-II alone was included in TCM-199. From the result obtained, it can be concluded that IGF-II (10 ng/ml) + LH (50ng/ml) could be added to TCM-199 to give better synergistic effects on bovine granulosa progesterone and estradiol production as compared to addition of IGF-II (50ng/ml) alone.

Keywords: Bovine granulose cells, IGF-II, LH
