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Effect of activin-A on progesterone synthesis in human luteal cells.

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Abstract

OBJECTIVE: To examine the effect of activin-A on basal and hCG-stimulated P production by human luteal cells.

DESIGN: Mixed luteal cell cultures and distinct cultures of two luteal cell types: small and large luteal cells from early and midluteal phase.

SETTING: Corpora lutea (CL) were obtained from the Obstetrics and Gynecology Department of the Catholic University, Rome, Italy.

PATIENTS: Fifteen nonpregnant women between 30 and 45 years of age underwent surgery for nonendocrine gynecological diseases.

INTERVENTIONS: Corpora lutea were obtained at the time of hysterectomy. The luteal cells were dispersed in Ham's F-12 medium containing collagenase at 37 degrees C in shaking water bath for 2 hours, filtered, centrifuged, and resuspended in fresh medium.

MAIN OUTCOME MEASURES: The cells diluted to a final concentration of 60,000 to 100,000 cells/mL of medium. After 24 hours, the cells attached to the wells and were incubated with or without hCG and/or activin-A at different concentrations.

RESULTS: Activin-A starting from 25 micrograms/L significantly decreased basal and hCG (250 mIU/mL [conversion to SI unit, 1.00])-induced P production by mixed luteal cells. The small luteal cells responded to hCG (250 mIU/mL), and the treatment with activin-A (from 25 to 100 micrograms/L) reduced their basal and hCG-induced P production. Activin-A addition did not change the amount of P release by large luteal cells at any concentration.

CONCLUSIONS: These results imply that activin-A plays a role in the local regulation of human CL.