

Effects of IL-6 on steroidogenesis of human granulosa cells *in vitro*

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Abstract

Recent studies suggest that in addition to gonadotropins, immunological factors, such as cytokines play an important role in production of steroid hormones. The purpose of this study was to examine effects of IL-6 on basal and FSH stimulated secretions of estradiol and progesterone in the presence of androstendione by human granulosa cells (GC) *in vitro*. Granulosa cells were harvested at the time of follicular aspiration after ovarian hyperstimulation according to standard protocols with hMG from patients undergoing IVF-ET. The cells (2×10^4 viable cells per well) were cultured with HAM's F-10 without any supplements (control) or increasing concentrations of recombinant human (rh) IL-6, (8,16,32,64,128 pg/ml) added in the absence or presence of FSH (96 IU/ml). Media were collected after 24,48,72 and 96 hours at a 24h interval and estradiol and progesterone levels were measured by an enzyme immunoassay (EIA) with automated system. Results of this study showed that leuteinized GC in the absence of FSH and the presence of androgen was able to produce estradiol and progesterone *in vitro*. This production was significantly increased in the presence of FSH. Basal and FSH stimulated productions of estradiol were significantly ($P < 0.05$) inhibited by increasing amounts of IL-6. Although this inhibitory effect on basal production of progesterone was not significant. IL-6 in a dose-dependent manner significantly ($P < 0.05$) inhibited FSH stimulated production of progesterone by GC. These results suggest that IL-6 may play an important role in the production of estradiol and progesterone and any disorders in level of IL-6 may cause estradiol and progesterone release disturbances.

Keywords: Steroidogenesis, Human granulosa cells, IL-6, Cytokine.

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