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JOURNAL ARTICLE

# Tumor necrosis factor and interleukin-1 stimulate testosterone secretion in adult male rat Leydig cells in vitro

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The actions of two cytokines, tumor necrosis factor (TNF) and interleukin-1 (IL-1), on testosterone production by dispersed adult testis cells and purified Leydig cells in culture were studied. In one set of experiments, testis cells from adult (90-day-old) rats were enzymatically dispersed. In another set of experiments, the dispersed testis cells were placed on a Percoll density gradient and were centrifuged to yield purified (greater than 85%) Leydig cells. Both whole testis cells and purified Leydig cells were cultured in the presence of varying doses of TNF or IL-1 with or without maximally stimulating doses of human chorionic gonadotropin (hCG). Both TNF and IL-1 stimulated basal secretion of testosterone in whole testis cells, as well as purified Leydig cells. Additionally, both TNF and IL-1 augmented maximally hCG stimulated testosterone secretion. Both cytokines stimulated testosterone secretion by dispersed testis cells as early as 4 hours, and the effect continued for up to 72 hours. The cytokines slightly, but significantly, stimulated testosterone production in purified Leydig cells after 24 hours, and continued for up to 72 hours. We have concluded from this data that TNF and IL-1 stimulate the testosterone secretion by adult rat Leydig cells. While this effect might be mediated through the action of the cytokines on testicular macrophages, there might also be a direct effect on the Leydig cell since augmentation of secretion occurred in purified Leydig cells, as well as whole testis cells. Therefore, TNF and IL-1 may serve as local regulators of Leydig cell function.

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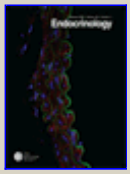

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