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In vitro human growth hormone increases human chorionic gonadotropin and progesterone secretion by human placenta at term: evidence of a modulatory role by opioids.

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Abstract

We examined the in vitro effect of human growth hormone (hGH) on hormone placental production and the modulation by opioids of this function. Small placental fragments from 12 term placentas were incubated at 37 degrees C in a 95% air and 5% CO₂ atmosphere for 4 h with various concentrations of hGH (1-1000 ng/ml) or naloxone (3-500 ng/ml). Both hGH and naloxone increased the concentrations of human chorionic gonadotropin (hCG) and progesterone in the media. The effect of the hGH was dose-dependent and statistically significant at 10 ng/ml, while naloxone was able to increase hCG and progesterone production only at the highest doses (250-500 ng/ml). The concomitant treatment with ineffective doses of naloxone and hGH was able to enhance hCG and progesterone secretion reaching levels similar to those obtained with the highest doses of hGH alone. High naloxone concentrations significantly decreased both hCG and progesterone secretion induced by high doses of hGH. This study confirms the relevance of growth hormone in sustaining placental endocrine activities and indicates an effect of opioids in modulating these functions.