

In vitro net progesterone production by human corpora lutea: Effects of human chorionic gonadotropin, dibutyryl adenosine 3',5'-monophosphate, cholera toxin, and forskolin

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Slices of human corpora lutea (CL) obtained at varying stages of the luteal phase from 21 women were used to study the effect of hCG on progesterone (P4) production. Slices obtained from mid- and late CL incubated with 10 IU/mL hCG exhibited a significant increase in net P4 production ($P < 0.001$), whereas slices from early CL did not. Mid-CL slices were the most sensitive to hCG (4.2-fold increase in P4 production compared to 1.2-fold for early CL and 2.7-fold for late CL). To investigate the unresponsiveness of early CL to hCG, [125 I]hCG binding was studied. All early CL had LH/hCG-specific receptors, and the apparent K_d for this binding was 1.95×10^{-10} M. Dibutyryl cAMP (1 mM), cholera toxin (0.84 mM), and forskolin (50 μ M) stimulated net P4 production ($P < 0.05$) in slices of early CL tissue incubated in the presence of methylisobutylxanthine (0.1 mM). Cholera toxin and forskolin stimulated cAMP formation by the early CL, but hCG failed to do so. These results confirm that hCG has a