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JOURNAL ARTICLE

Extracellular calcium and luteinizing hormone effects on 22-hydroxycholesterol used for testosterone production in mouse Leydig cells

A. W. Meikle, X. H. Liu and J. D. Stringham

Department of Internal Medicine, University of Utah School of Medicine, Salt Lake City 84132.

The effect of extracellular calcium on testosterone synthesis in response to luteinizing hormone (LH) or 22-hydroxycholesterol (22-OH-C) by isolated adult mouse Leydig cells was studied. Leydig cells were isolated by linear density gradient centrifugation. The cells were incubated in minimum essential medium with or without calcium (1.36 mmol/L) in an atmosphere of 95% air and 5% carbon dioxide at 37 degrees C for 3 hours with or without LH (10 ng/sample), or with or without 22-OH-C (10 μmol/L). Testosterone production in response to LH was significantly lower (P less than 0.02) in the absence of extracellular calcium and in the presence of verapamil (10 μmol/L), a calcium channel blocking agent. Extracellular calcium did not significantly (P greater than 0.05) affect testosterone production in cells incubated with 22-OH-C in either the presence or absence of LH. The results suggest that steps in steroidogenesis from 22-OH-C to testosterone are unaffected by extracellular calcium content and that extracellular calcium affects the use of intracellular cholesterol by the cholesterol side-chain cleavage enzyme.

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