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JOURNAL ARTICLE

Insulin-like growth factor 1, but not growth hormone, has in vitro proliferative effects on neonatal foreskin fibroblasts without affecting 5-alpha-reductase or androgen receptor activity

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Clinical observation of patients with congenital growth hormone (GH) deficiency and Laron-type dwarfism suggests that factors such as GH or insulin-like growth factor 1 (IGF-1) might in addition to androgens, be needed for normal phallic growth. We speculated GH or IGF-1 might have direct actions on genital tissues and performed the present study to evaluate the in vitro effects of GH and IGF-1 on cultured neonatal foreskin fibroblasts. Cells derived from foreskins of normal newborns were studied between cell passages 6 and 15. Serum-free media with and without 100 ng/ml GH, IGF-1, or both were added 24 hours prior to and at the time of study. To determine the activity of 5-alpha-reductase (5-alpha-R), 3H-testosterone (T: 2 nM) was added, and 5-alpha-R activity was calculated as femtomoles 3H-dihydrotestosterone and 3H-androstanediol produced/microgram DNA/hour. Androgen receptor (AR) binding was determined by the addition of 3H-dihydrotestosterone (dHT; 0.03125-0.5 nM) in the presence and absence of a 200-fold excess of unlabeled dHT. Specific binding was used in Scatchard analysis for determination of AR number (Bmax) and binding affinity (Kd). The rate of DNA synthesis was determined by incorporation of 3H-thymidine (3H-Thy) into trichloroacetic acid-insoluble material. DNA and protein content were determined on cell lysates. IGF-1, but not GH, had proliferative effects (significant increases in the rate of 3H-Thy incorporation, DNA, and protein content) but no effect on 5-alpha-R activity, Bmax or Kd. (ABSTRACT TRUNCATED AT 250 WORDS)

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J. Clin. Endocrinol. Metab., October 1, 2001; 86(10): 4741 - 4746.
[Abstract] [Full Text] [PDF]

A. YOSHIZAWA and D. R. CLEMMONS
Testosterone and Insulin-like Growth Factor (IGF) I Interact in Controlling IGF-Binding Protein Production in Androgen-Responsive Foreskin Fibroblasts
J. Clin. Endocrinol. Metab., April 1, 2000; 85(4): 1627 - 1633.
[Abstract] [Full Text]