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Effect of hypophysectomy and hormone replacement on fatty elongation in isolated microsomes of rat testes.

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Abstract

Effect of hypophysectomy on fatty acid elongation was investigated in isolated rat testicular microsomes incubated with [¹⁴C]malonyl CoA. Hypophysectomy resulted in a 40% decrease in total incorporation of ¹⁴C into fatty acids of microsomes. Several 18- and 20-carbon fatty acids of testicular microsomes from hypophysectomized rats had less ¹⁴C than did those from nonhypophysectomized ones, whereas only docosa-7,10,13,16-tetraenoic acid (22:4w6) had more ¹⁴C. Testosterone injected subcutaneously into hypophysectomized rats at a dose of 0.5 mg per day for eight days posthypophysectomy had no apparent effect on either the total ¹⁴C incorporated or the distribution of the ¹⁴C in the various fatty acids. Daily subcutaneous injections of 50 or 100 micrograms follicle stimulating hormone (FSH) had some effect on both total incorporation and distribution of ¹⁴C. Addition of 0.5 mg testosterone to the 50 micrograms FSH gave the same results as the FSH alone. Smaller amounts of stearic acid (18:0) and linoleic acid (18:2) and increased amounts of docosa-4,7,10,13,16-pentaenoic acid (22:5w6) were present in the microsomes of hypophysectomized compared to nonhypophysectomized rats. Testosterone replacement did not affect these differences, but FSH administration was partially effective in altering the values toward those observed in nonhypophysectomized rats. Results obtained in these experiments indicate that there is inhibition of the testicular microsomal fatty acid elongation system in hypophysectomized rats and that, although testosterone is not at all effective in relieving the inhibition, FSH administration is at least partly effective.