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Effects of Dehydroepiandrosterone on Oleic Acid Accumulation in Rat Liver

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The rates of hepatic de novo synthesis of both fatty acid and monounsaturated fatty acid, determined by incorporation of 3H from 3H₂ into fatty acid, were increased markedly when rats were fed a diet containing 0.5% (w/w) dehydroepiandrosterone (DHEA) for 14 days. The treatment of rats with DHEA also enhanced the conversion of [14C]stearic acid into oleic acid in the liver in vivo. DHEA did not suppress fatty acid degradation in the liver. Namely, mitochondrial palmitic acid oxidation was increased approximately 5-fold while peroxisomal palmitic acid oxidation was not altered in the hepatocytes from DHEA-treated rats. The rate of hepatic VLDL secretion in DHEA-treated rats was decreased markedly. These results indicate that the elevation of the hepatic fatty acid content, especially oleic acid, by DHEA feeding is due to an increase in both de novo fatty acid synthesis and the formation of oleic acid and to a decrease in the rate of hepatic VLDL secretion. Mitochondrial and peroxisomal fatty acid degradation does not appear to play a significant role in the accumulation of hepatic lipids.