

Superoxide radical generation, NADPH oxidase activity, and cytochrome P-450 content of rat liver microsomal fractions in an experimental hyperthyroid state:

Relation to lipid peroxidation

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The effect of thyroid hormone treatment on hepatic microsomal functions related to NADPH-dependent electron transfer reactions was studied in rats given 0.1 mg T₃/ kg BW for 1, 2, 3, and 7 consecutive days. This treatment resulted in increased rates of O₂⁻ generation by microsomal fractions, concomitantly with an enhancement in NADPH oxidase activity and decreased cytochrome P-450 content, in livers exhibiting increased respiration. Subsequent studies showed elevated levels of malondialdehyde in microsomal fractions and liver homogenates, as well as augmented chemiluminescent response in the latter system. These results indicate that the calorogenic effect of T₃ on the liver tissue is accompanied by a stimulation of microsomal functions involving univalent reduction of oxygen. This cellular response might lead to a greater lipid peroxidative rate and cytochrome P-450 loss as secondary events of thyroid hormone action. © 1985 by The Endocrine Society.