Iron-induced changes in nitric oxide and superoxide radical generation in rat liver after lindane or thyroid hormone treatment

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The involvement of cytosolic nitric oxide (NO) and mitochondrial superoxide radical (O2 ·-) production was evaluated as a mechanism triggering liver oxidative stress in lindane (40 mg/kg) or L-3,3?,5-triiodothyronine (T3, 0.1 mg/kg for 2 consecutive days) treated animals (male Sprague-Dawley rats) subjected to iron overload (200 mg/kg). Lindane and iron led to 504 and 210% increases in the content of hepatic protein carbonyls as an index of oxidative stress, with a 706% enhancement being produced by their combined administration. T3 did not alter this parameter, whereas iron overload increased the content of protein carbonyls by 116% in hyperthyroid rats. Lindane increased NO generation by 106% without changes in generation of O2 ·-, whereas iron enhanced both parameters by 109 and 80% over control values, respectively, with a net 33 and 46% decrease, respectively, being elicited by the combined treatment related to iron overload alone. Hyperthyroidism increased liver NO (69%) and O2 ·