

# Dose-dependent study of the effects of acute lindane administration on rat liver superoxide anion production, antioxidant enzyme activities and lipid peroxidation

Junqueira, Virginia B.C.

Simizu, Kiyoko

Videla, Luis A.

Silvia, Silvia B.

The administration of single i.p. doses of lindane (20, 40, 60 and 80 mg/kg) to rats produced a progressive increase in the liver microsomal content of cytochrome P-450 and in the rate of superoxide anion generation, as measured by adrenochrome formation. A dose-dependent increase in lipid peroxidation of liver homogenates, assessed by measuring thiobarbituric acid reactants, was also found. Lindane treatment did not alter the activity of liver glucose-6-phosphate dehydrogenase, glutathione reductase or glutathione peroxidase, while that of superoxide dismutase and catalase was significantly reduced. These changes were accompanied by a progressive liver steatosis. The collected metabolic data were interpreted in terms of a causal relationship between an increase in superoxide radical generation, secondary to cytochrome P-450 induction and a resulting increase in lipid peroxidation. The decrease in superoxide dismutase and catalase activities is likely to contribute to the increased lev