Effect of phenobarbital and 3-methylcholanthrene on the early oxidative stress component induced by lindane in rat liver

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1. Lindane administered to untreated rats or rats pretreated with phenobarbital (PB) or 3-methylcholanthrene (MC) increased liver lipid peroxidation, of the same magnitude in all groups. 2. PB pretreatment produced a 50% increase in lipid peroxidation (TBAR) by liver homogenates and microsomes, an effect accompanied by increases in cytochrome P-450, NADPH-cytochrome P-450 reductase, NADPH oxidase and microsomal superoxide anion production, MC pretreatment resulted in increases in liver cytochrome P-450 and NADPH oxidase only. 3. Pretreatment of rats with PB, but not MC or lindane, gave increases in glutathione peroxidase and reductase. 4. Pretreatment with PB, but not MC, increased liver GSH. Lindane decreased liver GSH to the same extent as PB plus lindane. 5. Biliary GSH, GSSG and bile flow were decreased by lindane to similar extents in all groups. 6. Lindane induced periportal necrosis with haemorrhagic foci in all groups. 7. Data presented indicate that the early lipid peroxidativ