

Effects of metadoxine - a liver protecting agent on short-term extrahepatic cholestasis

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Metadoxine, consisting of pyridoxine and pyrrolidone carboxylate, has been used as a promising liver protecting agent in alcoholic liver diseases in recent times. It has been shown to be able to restore NADH, GSH, ATP levels and the physiological proportion between saturated and unsaturated fatty acids in many clinical and experimental investigations. Our aim was to investigate the effect of this compound on the redox state in short-term biliary obstruction. Extrahepatic obstruction was induced by 1-hour-ligation of the common bile duct in rats under deep anaesthesia. Group A: sham operated (N = 8), Group B: metadoxine treated sham operated rats (N = 8; 300 mg/bwkg sc.), Group C: rats with common bile duct ligation (N = 8), Group D: rats with extrahepatic cholestasis and metadoxine treatment (N = 8; 300 mg/bwkg sc.). Liver cholestatic injury was proved by routine laboratory parameters (bilirubin, aspartate aminotransferase, alanine aminotransferase, gamma-glutamyltransferase, alkaline phosphatase). Free SH-group content, hydrogen-donating ability, reducing power property and conjugated diene concentration were measured in sera and homogenates by spectrophotometric method in order to estimate the redox state, as well as free radical antioxidant balance. Elevated lipid peroxidation and decreased antioxidant capacity of liver homogenates and sera could be observed in the case of ligation. Metadoxine treatment improved antioxidant capacity of the liver and diminished total bilirubin concentration compared to the group without treatment. Metadoxine was able to maintain the cell redox balance in short-term extrahepatic ligation which can be related to its glutathione-saving and proton-donating ability, resulting in the moderation of lipid peroxidation processes.