Organ toxicity of diethylnitrosamine and capsaicin in mice – in vivo study

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Abstract
Diethylnitrosamine (DEN) is proven to be toxic to kidneys and liver and to act as a potent carcinogen mainly in liver. Capsaicin (CAP) is an alkaloid produced by Capsicum genus plants and is considered to be a protective agent against toxicity and carcinogenicity of many substances including DEN. The aim of this study was to assess the toxicity of DEN and CAP in liver and kidneys in mice. The experiment started after two weeks of acclimatisation and was conducted according to the Czech animal welfare protection legal guidelines. At the end of the experiment the mice were sacrificed and the toxicity of DEN and CAP in liver and kidneys were analysed. The histopathological examination of the liver revealed multifocal lymphoplasmacytic reaction in parenchyma in DEN treated group. CAP used as both preventive and therapeutic agent caused reduction in number and extent of lesions. In CAP group mitotic figures were found indicating xenobiotic-induced hepatotoxicity or regenerative changes. In the kidneys DEN revealed also multifocal lymphoplasmacytic reaction that has been mitigated by CAP. Moreover histopathological observation of the kidney in DEN group has revealed granular dystrophy of the renal tubules which has not been presented in CAP treated mice. Levels of ALT, AST activity, total protein and albumin concentration was not statistically different among control and experimental groups. In this study mild protective effect of CAP on DEN-induced hepatotoxicity and nephrotoxicity was shown only in histopathological changes. The toxicity of CAP itself is questionable and further studies should be performed to verify its chemopreventive potential.

Key words: capsaicin, diethylnitrosamine, hepatotoxicity, mice, nephrotoxicity

References
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