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## The protective effect of the bilberry extract on the level of oxidative stress in rats exposed to hepatotoxic effects of carbon tetrachloride

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The protective activity of the anthocyanins from the bilberry extract in the acute liver damage in rats caused by CCl<sub>4</sub> (1.5 mL/kg i.p.) was examined. The mechanism of the acute hepatotoxicity was based on an excessive production of the reactive metabolites CCl<sub>4</sub>, which led to the morphological liver cells damage through the lipid peroxidation induction and oxidative stress. The membrane damage caused the enzyme leakage from the hepatocytes and increased activity of AST and ALT in the serum. The acute CCl<sub>4</sub> poisoning resulted in a significant increase of the pro-oxidative (MDA and GSSG) and a decrease of the anti-oxidative (GSH, CAT, SOD, GST, GPx, and GR) markers in the liver. The CCl<sub>4</sub> toxic effects caused the massive perivenular coagulation necrosis followed by micro and microvesicular fatty changes in the periportal region. The protective use of the bilberry extract (100 mg/kg of the oral ten-day treatment with anthocyanins) prior to the administration with the toxic CCl<sub>4</sub> resulted in an evident decrease of the pro-oxidative markers, as well as a significant decrease of the dissipation of the liver anti-oxidative defence capacities in comparison to the results detected in the animals treated with CCl<sub>4</sub> exclusively. The pathohistological changes were described as less serious reversible hydropic changes characterized by an evident absence of the necrosis. The protective effect of the anthocyanins was based on the neutralization of the highly reactive CCl<sub>4</sub> metabolites by adding the hydrogen atom from the hydroxyl groups of delphinidin from the anthocyanin.

### Biography

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