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MEETING ABSTRACT

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Transcriptomic effects of ursodeoxycholic acid treatment on adriamycin-induced oxidative liver injury

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Background: Adriamycin (ADR) is a potent anticancer drug; however, hepatotoxicity commonly overshadows its anti-neoplastic effectiveness. The overproduction of free radicals is considered as a significant cause of this side effect. The aim of our study was to evaluate the influence of ursodeoxycholic acid (UDCA), a bile acid with antioxidative properties, on the expression of genes involved in antioxidative response to ADR treatment.

Methods: Eighteen male Wistar rats were divided in three groups. Animals were treated with vehicle (saline i. p.), ADR (3 mg/kg i. p. every other day for 3 doses in total) or both with ADR and UDCA (25 mg/kg p. o. every other day for 3 doses in total, starting one day before administering ADR). On day 28, animals were euthanized and total RNA was isolated from liver tissue and reversely transcribed into complementary DNA. Gene expression was determined by qRT-PCR and results were analyzed using the $2^{-\Delta\Delta C_T}$ method.

Results: The relative expression of genes encoding Sod, Cat, Gpx and Gr in the liver of animals treated with ADR was 4.3-, 5.5-, 12.4- and 6.2-fold decreased, respectively. Co-treatment with UDCA resulted in 1.7-, 2.8-, and 12.0-fold increased expression of Sod, Cat and Gpx and 1.8-fold decreased expression of Gr, compared to the group treated with ADR only. In addition, the expression of pro-apoptotic Bax was 1.7-fold increased in the livers of animals treated with ADR, whereas co-administration of UDCA reduced Bax expression to control values.

Discussion: According to its ability to enhance the antioxidative defence system at the transcriptomic level as well as to decrease expression of pro-apoptotic Bax mRNA in the liver, UDCA may be considered as an agent with potentially hepatoprotective properties against oxidative liver injury induced by high doses of ADR.

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