

ABSTRACT

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Title of diploma thesis: **Effect of food flavonoids on the activity and expression of selected biotransformation enzymes in rat liver and intestine**

The use of herbal products in the form of dietary supplements containing a mixture of concentrated anthocyanins, the important class of flavonoids, is still increasing. This fact leads to research and characterisation of the interaction of these bioactive compounds with the biotransformation system of living organisms. Changes in the activity and the expression of phase I and II biotransformation enzymes caused by flavonoids may affect pharmacokinetic and pharmacodynamic profiles of co-administered drugs. So may be impaired the safety and efficacy of pharmacotherapy. In this study several groups of rats were *in vivo* treated with extract of a food supplement Urinal Akut[®] containing flavonoids from cranberry (*Vaccinium macrocarpon* Ait.). The aim of this study was to evaluate the effect of flavonoids contained in the extract on activity and expression of intestinal and hepatic enzymes: cytochrome P450 (CYP3A, CYP1A1, CYP1A2, CYP2B), carbonyl reductase 1 (CBR1), glutathione S-transferase (GST) and UDP-glucuronosyl transferase (UGT).

The activities of all intestinal enzymes were not modulated. No significant differences have been identified also in the activity of CYP1A2 and CYP2B in the liver. The extract showed a mild to moderate inductive effect on CYP3A and CYP1A1 after 11 days of its continuous administration to rats. The activity of UGT in the liver microsomal fraction was also increased. Induction of CYP1A1 and UGT activity in the liver microsomal fraction was not confirmed by CYP1A1 and UGT protein expression. The activity of hepatic cytosolic CBR1 was mildly to moderately increased proportionally to the time of administration of the extract. The hepatic GST activity in all groups was slightly increased comparing to the control.