Summary

The vast majority of exogenous substances is metabolized in the liver. In the course of the biotransformation, partly biologically non-active products, partly reactive species leading to cell structure injury and even to the liver failure are produced. Oxidative stress plays a significant role in the toxic- and drug-induced liver damage. Endogenous and exogenous antioxidants contribute to equilibrium between the production and the elimination of reactive oxygen species and thus prevent the oxidative stress.

In acute experiments in rats we examined the ability of natural antioxidants silymarin, naringin and resveratrol and of synthetic chelator deferipron to protect against liver damage induced by paracetamol, thioacetamide and tamoxifen. The following parameters of oxidative stress were measured in the liver homogenates: level of lipid peroxidation (LP), concentration of reduced glutathione (GSH), activities of glutathione peroxidase (GPx) and of catalase (CAT); in some cases the iron liver content. The following markers of liver damage were measured in serum: alanine aminotransferase (ALT), aspartate aminotransferase (AST), glutamate dehydrogenase (GLDH).

Concernig markers of oxidative status, silymarin exerted the most efficient antioxidant properties amelioratig the TAA- and TAM-induced lipid peroxidation and ameliorating the TAA-induced CAT activity depletion. Antioxidant effect of naringin was demonstrated by protecting of TAM-induced lipid peroxidation. Protective effect was manifested by decreasing in TAA-induced lipid peroxidation. The deferipron administration prevented the TAM-induced oxidative stress protecting the increase in lipid peroxidation and the increase of iron content.

Concernig hepatotoxicity markers in serum, resveratrol premedication had the protective effect on the APAP-increased ALT, AST and GLDH activity and on the TAA-enhanced ALT activity. Naringin premedication resulted in a decrease of the APAP-enhanced ALT, AST and GLDH activity. Silymarin ameliorated the APAP-enhanced GLDH activity and the TAA-induced AST activity.

Silymarin was the most hepatoprotective agent in the thioacetamide-induced liver injury. Naringin served prevent in paracetamol-induced hepatotoxicity. Resveratrol exerted protective effect in paracetamol- and thioacetamide-induced liver damage.