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## Effects of short-term exposure of T-2 toxin and deoxynivalenol on gene expression and activity of the members of the glutathione redox system in broiler chicken

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The aim of this study was to evaluate the effects of T-2 toxin and deoxynivalenol exposure in young broiler chickens at a dose of 5.77 mg T-2 toxin/kg feed and 4.86 mg DON/kg feed.

The changes of the glutathione redox system at enzymatic and molecular levels were followed in the first 24 hours of exposure in 1 and 3-week-old chickens. Liver samples were taken after 2, 4, 8, 12, 16, 20 and 24 hours of the beginning of the feeding trial. The activity of glutathione peroxidase (GPx), reduced glutathione content (GSH), some parameters of lipid peroxidation (CD, CT and MDA), and changes of the gene expression of phospholipid hydroperoxide glutathione peroxidase (*GPX4*), glutathione reductase (*GR*), and glutathione synthetase (*GS*) were determined in the liver of chickens.

Activity of GPx and GSH content showed elevated levels in both ages in the T-2 toxin treated group compared to the control, in the first 8 hours of exposure, and in case of the 3-week-old group elevated levels were seen in GPx and GSH levels after 20 hours of exposure, which indicates a reactivation in the glutathione redox system. At molecular level we did observe only minor changes, which may be in association with a reserve of preformed or formed molecules in the liver, which was not depleted at protein level. In addition, the control group showed changes during the first 24 hour-period in gene expression and activity as well, which is similar to circadian changes of the antioxidant system. In the parameters of lipid peroxidation only minor changes were observed, which indicates that the potential oxidative stress inducing effect of the applied doses of T-2 toxin and deoxynivalenol was protected by the antioxidant defense of the liver in short term.

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