

Interspecies variation in the hepatic biotransformation of zearalenone: Evidence for bio-inactivation of mycoestrogen zearalenone in sturgeon fish

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Abstract

Zearalenone (ZEA) as mycoestrogen is found in human foods and animal feeds. Its estrogenic potency depends on its biotransformation fate. The hepatic biotransformation of ZEA in two species of sturgeon fish (*Acipenser persicus* and *Huso huso*) was investigated. ZEA was incubated with the hepatic microsomal and post-mitochondrial sub-fractions in the presence of NADPH and the metabolites were determined by means of HPLC. Moreover, the rate of glucuronidation for ZEA and its metabolites were estimated in the presence of uridine diphosphateglucuronic acid. β -zearalenol (β -ZOL) was found to be the major metabolite of ZEA by both sub-fractions. Enzymatic kinetics studies revealed that the maximum velocity (V_{max}) in microsomal and post-mitochondrial fractions for β -ZOL production was found 5- and 7-folds in *Huso huso* and 8- and 12-folds in *A. persicus* higher than that for α -ZOL production, respectively. The *H. huso* hepatic post-mitochondrial fraction mainly glucuronidated ZEA while in *A. persicus*, the metabolites and in particular β -ZOL were glucuronidated. Data suggest that the hepatic biotransformation of ZEA in studied sturgeons resulted in detoxification of ZEA as the main metabolite tends to be β -ZOL with weaker estrogenic property. Moreover, clear differences in glucuronidation profile are indicating interspecies variety in hepatic biotransformation of ZEA.

Keywords: *Acipenser persicus*; *Huso huso*; Hepatic biotransformation; Glucuronidation; Subcellular fractions; Zearalenone.

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