



Alterations of protein profile in rat liver exposed to sub-acute diazinon: A proteomics approach.

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Background and Aims: Diazinon (DZN), an extensively used organophosphorus pesticide is applied in agricultural pest control. Previous studies have shown that remaining amounts of DZN in water, soil, fruits, vegetables, grains and other food products may induce hepatotoxicity. The present study was designed to investigate the alterations of protein profiles in rat liver exposed to sub acute diazinon (DZN) using proteomic approaches. Toxicoproteomics is being developed for the discovery of new biomarkers and toxicity signatures in target organs, such as liver.

Methods: 2 groups of rats were used in the experiment. Corn oil (control) and DZN (15 mg/kg per day, orally) were given to male Wistar rats (n = 6) for 4 weeks. Liver tissues were homogenized in lysis buffer. The proteins were separated by two-dimensional polyacrylamide gel electrophoresis. After electrophoresis, the gels were stained with silver nitrate. Then the gels were scanned and analyzed using the image master software. Protein levels were normalized against beta actin. A number of proteins were found to be up-regulated or down regulated compared to the control. Detected . Proteins were identified by using other studies that had identified proteins of the rat liver.

Conclusions: Expression levels of a total of 46 protein spots were significantly altered by DZN. Detected proteins were involved in molecular cytoskeleton system, cell metabolism and antioxidant system. These data could provide useful insights for better understanding the hepatotoxic mechanisms of DZN and develop novel protein biomarkers.

Keywords: Diazinon; Proteomics; Two-dimensional gel electrophoresis; Liver