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Histopathological and biochemical investigations of protective role of honey in rats with experimental aflatoxicosis

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The aim of this study was to investigate the antioxidant properties and protective role of honey, considered a part of traditional medicine against carcinogen chemical aflatoxin (AF) exposure in rats, which were evaluated by histopathological changes in liver and kidney, measuring level of serum marker enzymes, antioxidant defense systems and lipid peroxidation content in liver, erythrocyte, brain, kidney, heart and lungs. For this purpose, a total of eighteen healthy Sprague-Dawley rats were randomly allocated into three experimental groups: A (Control), B (AF-treated) and C (AF+honey-treated). While rats in group A were fed with a diet without AF, B, and C groups received 25 µg of AF/rat/day, where C group additionally received 1 mL/kg of honey by gavage for 90 days. At the end of the 90 days experimental period, we found that the honey supplementation decreased the lipid peroxidation and the levels of enzyme associated with liver damage, increased enzymatic and non-enzymatic antioxidants in the AF+honey-treated rats. Hepatoprotective and nephroprotective effects of honey is further substantiated by showing almost normal histological architecture in AF+honey-treated group, compared to degenerative changes in the liver and kidney of AF-treated rats. Additionally, honey supplementation ameliorated antioxidant defense systems and lipid peroxidation content in other tissues of AF+honey-treated rats. In conclusion, the present study indicates that honey has a hepatoprotective and nephroprotective effect in rats with experimental aflatoxicosis due to its antioxidant activity.

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Histopathological and biochemical investigations of effect of grape seed extraction on the prevention of aflatoxin-induced liver lesions in rats

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Aflatoxicosis is a mycotoxicosis developing acute or chronic, caused by aflatoxins in domestic animal and humans. Aflatoxicosis is a widespread problem especially in the underdeveloped and the developing countries. Aflatoxins are potential threat to humans and animal. The chronic toxications especially suppress the immune system which facilitates the occurring of many diseases. Liver is main organ affected by aflatoxicosis and are histopathologically observed necrosis, fibrosis and hepatocarcinogenesis. It is not well known the effective protection in aflatoxicosis. However, it is reported that some vitamins, proteins and inorganic substances have a protective effect. It was indicated that Grape Seed (GS) had many pharmacologic effects as such antioxidant, immunomodulatory and anticancer. However, there is not any study about its protective effect on aflatoxicosis. This study was planned to investigate the effect of GS on the prevention of aflatoxin-induced liver lesions in rats in term of biochemical and histopathological methods; for this purpose, a total of 30 rats was allotted into one of three experimental groups: A, B and C each containing 10 animals. The rats were sacrificed at 90th day of the experiment. Blood samples for the biochemical analysis and tissue samples from livers for histopathological examination were taken. On the basis of biochemical and histopathological findings, it is concluded that treated plant extract decrease the lipid peroxidation and liver enzymes, increase the antioxidant defense system activity and prevent the liver damage in the AFB1-treated rats. The study indicates that hepatoprotective effects are obtained from the group C.

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