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Relative toxicites of aflatoxins for the risk assessment

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Aflatoxins are metabolites of fungi *Aspergillus spp.* that world-widely contaminate diverse foodstuffs including corn and peanuts. It is well known that aflatoxins are highly mutagenic, carcinogenic and possibly teratogenic. Although aflatoxins have received the great attention among the various mycotoxins due to their potent hepatocarcinogenicity in certain species, it is extremely crucial to elucidate the relative toxicity and carcinogenicity of the types (B_1, B_2, G_1 and G_2) of aflatoxins for the risk assessment. In the present study, the relative toxicities of aflatoxins (B_1, B_2 and G_1; 10, 50 or 250 μg/kg body weight, twice a week, i.g.) were investigated following oral intoxication to rats twice a week for 28 days. We examined the changes in serum biochemistry, histopathological findings and early biomarkers such as p53, CYP450 and GST-P on the immunohistochemical study of the rat liver treated with aflatoxins. Serum ALT activity, p53 and CYP450 in rats treated with high doses of AFB_1 significantly increased compared to that in control rats, although hepatic GST-P^+ foci were not observed in all groups of the aflatoxins. AFB_1-induced hepatic lesions were massive vacuolar degeneration and lipidosis, centrilobular focal necrosis with mononuclear cell infiltrations, and oval cell proliferation in periportal areas. It is suggested that AFB_1 is more hepatotoxic than AFB_2 and AFG_1, based on the hepatocyte alterations in the repeated exposure group at 250 μg/kg body weight for 28 days.