Cytotoxic Effects of Aflatoxin B₁ on Rat Hepatocytic Cells: Induction of DNA Single Strand Breaks and *Apoptosis

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ABSTRACTDNA single strand breaks and apoptosis in AFB₁-induced cytotoxicities in rat hepatocytic cells were investigated. Hepatocytes collected from rat exposed to 0.25, 0.5 and 1.0 mg/kg AFB₁ for 72 hours in vivo showed significant increases (p<0.05) in DNA single strand breaks in a dosagedependent pattern. Individual difference in the induction of DNA strand breaks in a cell population that received the same AFB₁ treatment also could be observed. At higher dosage, 2.0 mg/kg AFB₁ treatment elicited sub-acute to acute hepatitis accompanied with hyperplasia in bile duct epithelia. In addition, with lethal dosage (5.0 mg/kg), diffused necrosis, hemorrhage, inflammation, and apoptosis could be found in rat exposed to AFB₁. Characteristic morphological changes in apoptotic hepatocytes were confirmed by TUNNEL assay, TEM and by the appearance of 185-200 bps DNA fragmentation. Expression of p53 and Bcl-2 proteins could not be quantified by western blot analysis in all treatments. We concluded that apoptosis and/or necrosis in rat hepatocytes could be the consequences of AFB₁, exposure at higher dosage range and nucleic DNA damages resulted from lower AFB₁, dosage range. The role of Bcl-2 and p53 in AFB₁ toxicities remains to be determined. [Sun YL, *Lee JG, Cytotoxic Effects of Aflatoxin B₁ on Rat Hepatocytic Cells: Induction of DNA Single Strand Breaks and Apoptosis. Taiwan Vet J 33(2): 123-134, 2007. *Corresponding author TEL: (02)3366-3873, E-mail: dvmjgl@ccms.ntu.edu.tw]

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