

Synergistic Effect of Hepatitis B Virus and Aflatoxin B1 in Hepatocarcinogenesis in Tree Shrews

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Abstract

An animal experiment with tree shrews was performed to detect the synergistic effects of hepatitis B virus (HBV) infection and dietary aflatoxin B₁ (AFB₁) in hepatocarcinogenesis. Adult healthy tree shrews (Tupaia belangeri chinensis) were divided into four groups: Group A (HBV + AFB₁)—animals were infected with human HBV serum at first, then fed AFB₁ diluted with milk, 150 ug/kg.bw/day, 6 days/week for 105 weeks. Group B (HBV)—animals were infected with human HBV as Group A, but no AFB₁ treatment. Group C (AFB₁)—animals were treated with AFB₁ as Group A but no HBV infection. Group D—animals were treated neither with human HBV nor AFB₁. During the experiment, blood samples and liver biopsies were taken regularly from all animals in each group. All the animals were sacrificed on the 160th week when the experiment ended. The samples of sera and liver tissues were checked for HBV markers and histological changes. Hepatocellular carcinomas (HCCs) were found only in Group A and Group C, with incidences of 67% and 30% respectively. The average time for HCC occurrence in Group A and Group C was 120.3 ± 16.6 and 153.3 ± 5.8 weeks respectively (P < 0.01). Even though no HCC occurred in Group B, 1 animal which died before the end of the experiment showed two large hepatocellular nodules. These results showed that there is synergistic effect between HBV and AFB₁ in tree shrews' hepatocarcinogenesis, even though the hepatocarcinogenic effect played by HBV alone is rather weak.

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