

Pathogenesis, biosynthesis and mechanism of toxicity of aflatoxin, a potent hepatocarcinogen

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1. INTRODUCTION

Aflatoxin B1 (AFB1) is a wide spread mycotoxin. It is recurringly generated by the popularly known saprophytes i.e. *Aspergillus flavus* and *Aspergillus parasiticus*. Mycotoxin is produced by these fungi in foodstuffs when they lack the optimum association with moisture and humid conditions, such as in case of oil seeds, peanuts and dry fruits (Baydar et al., 2005). They show an expeditious growth in food sources like maize also, and can further increase in unsanitary or improper storage conditions. AFB1 intoxication is also prevalent in products from farm animals. Illustrations of its intoxication are reported from their milk, meat and eggs, when these animals are fed on fodder contaminated with aflatoxin (Fink-Gremmels, 1999; Bennett and Klich, 2003). Also, reports suggest of high probability of chronic exposure of more than 4.5 billion population towards aflatoxin-contaminated foods. Hence, the US Food and Drug Administration considers it as an inevitable source of food contamination, which requires imperative measures to be minimized (Williams et al., 2004).

Four variants of aflatoxin are described to have carcinogenic effect. Out of these variants of aflatoxin i.e. B1, B2, G1, G2, the variant type B1, which is known as Aflatoxin B1 is the most potent hepatotoxic and hepatocarcinogenic agent. AFB1 is believed to be associated with a number of biological anomalies, such as asteratogenicity, acute toxicity, mutagenicity leading to carcinogenicity (McLean and Dutton, 1995). Epidemiological surveys have exemplified it to be involved the utmost in hepato-carcinogenicity caused due to any mycotoxin and primarily contributing towards increased incidence of HCC (Wang et al., 2001). AFB1 is even categorized by the International Agency for Research on Cancer (IARC) as a category I carcinogens for its ability in leading to HCC.

AFB1 is pervasive in Geographical locations of Southeast Asia and Sub-Saharan Africa. The pattern of its distribution is often correlated with the socio-economic status of the countries, and