

Title                Studies on the aflatoxin contamination in relation to biochemical characteristics in chillies stored under different conditions

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### **Abstract**

India is the largest producer of chillies in the world, contributing to over 25% of the total world production. Exports are only 2.75%-7.5% of its total production due to high domestic consumption. Pesticide residues and aflatoxin contamination are the two major post-harvest stage issues affecting chili exports from India.

Aflatoxins are difuranocoumarin derivatives produced as secondary metabolites by the fungi *Aspergillus flavus* and *Aspergillus parasiticus*. They are potent carcinogenic, teratogenic, mutagenic and immunosuppressive agents. Most developing countries lie in the tropics, where temperatures and relative humidities often favour mold growth and where no or only limited facilities exist for monitoring products for aflatoxin contamination. The present study was undertaken to evaluate the quality of chilli pods of different popular varieties in relation to the intensity of aflatoxin contamination and the biochemical characteristics, under the prevailing post-harvest conditions. The survey was carried out in Guntur and Krishna districts the major chilli growing areas in Andhra Pradesh, India. Eight varieties of chillies were collected from the market yards and screened for the intensity of aflatoxin contamination, using indirect-competitive ELISA technique. Varietal differences in aflatoxin production is of considerable practical significance. The elucidation of precise chemical nature of factors responsible for varietal differences in susceptibility to toxin production will help plant geneticists to breed strains with such desirable characteristics or traits. Three selected genotypes were further stored at both ambient and cold storage conditions to study the progress of aflatoxin contamination. Simultaneously, the biochemical constituents, namely protein, carbohydrate, phenol, starch and capsaicin contents of all the samples were also evaluated. The increase in aflatoxin content was more in pods stored under ambient conditions as compared to those stored under cold storage conditions. The toxin content was higher in 10-month old samples (stored at ambient temperatures) than in freshly harvested samples. The total phenolic acid content was found to be high in the varieties having low aflatoxin content. The significance of the results is discussed.