Aflatoxin contamination of commercial pistachio cultivars in Iran

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Abstract

Aflatoxin is one of the secondary metabolites produced by fungi i.e., Aspergillus flavus and *A. parasiticus* that have great dangers for human health. Aflatoxin contamination of pistachio varies based on cultivar types and appearance of the pistachio shell. Early splitting and hull tattering are two major predisposing factors that facilitate contamination of pistachios with aflatoxigenic fungi in the orchard. The shells of early split and hull tattering pistachios typically have some discoloration. The amount of shell discoloration in three commercial pistachio cultivars, 'Ohadi', 'Ahmadaghaii' and 'Kalehghochi', and their relationship with aflatoxin contamination were evaluated. Nuts were separated into various categories according to appearance of the shell. The content of aflatoxin was measured by HPLC method. Results showed that, aflatoxin contamination was only observed in pistachios with shell discoloration. 'Ahmadaghaii' pistachio had the highest content of aflatoxin that significantly differed with other cultivars. Aflatoxin content in stained shells of 'Kalehghochi' pistachio cultivar was in respective rank. The lowest aflatoxin content was observed in 'Ohadi' pistachio with shell discoloration. No aflatoxin was detected in all of the samples from 'Ohadi', 'Ahmadaghaie' and 'Kalehghochi' without shell discoloration. Based on these results, removal of shell stained pistachios by instructions to hand sorters can eliminate aflatoxin contamination from pistachio crop.