

Aspergillus section Flavi and aflatoxins: occurrence, detection, and identification in raw peanuts and peanut-based products along the supply chain

ABSTRACT

Aflatoxin contamination in foods is a global concern as they are carcinogenic, teratogenic and mutagenic compounds. The aflatoxin-producing fungi, mainly from the *Aspergillus* section *Flavi*, are ubiquitous in nature and readily contaminate various food commodities, thereby affecting human's health. The incidence of aflatoxigenic *Aspergillus* spp. and aflatoxins in various types of food, especially raw peanuts and peanut-based products along the supply chain has been a concern particularly in countries having tropical and sub-tropical climate, including Malaysia. These climatic conditions naturally support the growth of *Aspergillus* section *Flavi*, especially *A. flavus*, particularly when raw peanuts and peanut-based products are stored under inappropriate conditions. Peanut supply chain generally consists of several major stakeholders which include the producers, collectors, exporters, importers, manufacturers, retailers and finally, the consumers. A thorough examination of the processes along the supply chain reveals that *Aspergillus* section *Flavi* and aflatoxins could occur at any step along the chain, from farm to table. Thus, this review aims to give an overview on the prevalence of *Aspergillus* section *Flavi* and the occurrence of aflatoxins in raw peanuts and peanut-based products, the impact of aflatoxins on global trade, and aflatoxin management in peanuts with a special focus on peanut supply chain in Malaysia. Furthermore, aflatoxin detection and quantification methods as well as the identification of *Aspergillus* section *Flavi* are also reviewed herein. This review could help to shed light to the researchers, peanut stakeholders and consumers on the risk of aflatoxin contamination in peanuts along the supply chain.

Keyword: Aflatoxins; *Aspergillus* section *Flavi*; Peanuts; Peanut supply chain; Raw peanuts; Peanut-based products