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Contamination of cereal and corn based snacks with aflatoxins

Gulsen Saleh, A Amin, H Abo Gahali, A Hamed
Faculty of Medicine, Cairo University, Egypt

Cereals and corn are exposed to fungal attack in the field or during storage and this attack may result in mycotoxin contamination of the corps. The main toxic effects are carcinogenicity, genotoxicity, teratogenicity, nephrotoxicity, hepatotoxicity, reproductive disorders and immunosuppression. The most commonly found of mycotoxins, namely aflatoxins, which carry potential risks for humans. Aflatoxins are a group of structurally related toxin metabolites produced by many strains of *Aspergillus flavus*, *Aspergillus parasiticus* and *Aspergillus nomius*. Aflatoxin exposure has been linked to impaired growth, kwashiorkor and liver cancer. The aim of the study is to identify the molds and aflatoxins contaminating cereal and corn based snacks. One hundred cereal-derived snacks and 50 corn-based snacks samples, were randomly purchased from different supermarkets of Great Cairo, Egypt. Samples were purchased with intact package and analyzed before the expiration date. The most frequent fungal genera found in the samples were *Aspergillus*, *Penicillium*, *Alternaria*, *Fusarium* and *Cladosporium* with frequencies of 41, 16, 10, 8 and 3%, respectively (Figure 1). Additionally, the numbers of contaminated cereal based baby foods samples with AFB1, B2, G1 and G2 were 14, 2, 6 and 4%. Also, 34, 14, 18 and 8% of corn-based snack samples respectively (Figure 2). Ten essential oils of (cinnamon, cumin, clove, fennel, garlic, lemon grass, marjoram, peppermint, rosemary and thyme) plants using in combating aflatoxigenic mold *A. flavus* growth and its aflatoxins production. Cinnamon and garlic essential oils caused complete inhibition to all types of aflatoxins at concentrations of 60 and 80µl respectively. Monitoring fungal contaminations as well as mycotoxins should be carried out periodically and the procedures to prevent mould contamination should be developed. Due to health and economic consideration, natural plant essential oils may provide an alternative method to protect food from fungal contamination.

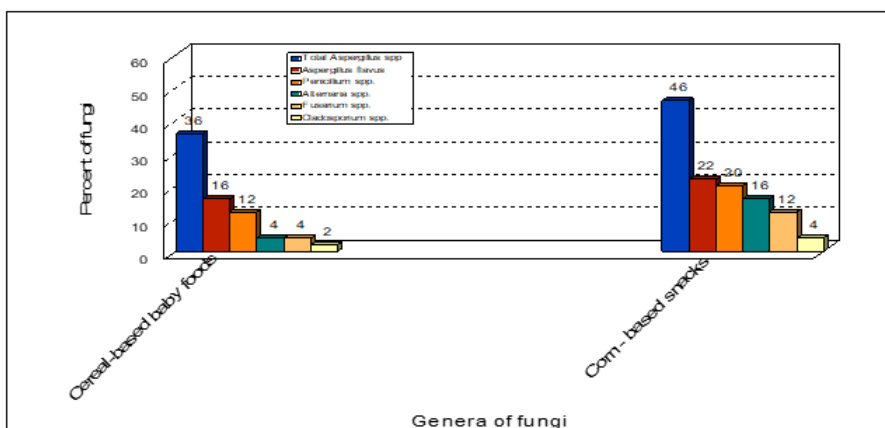


Figure 1: Genera of Fungi

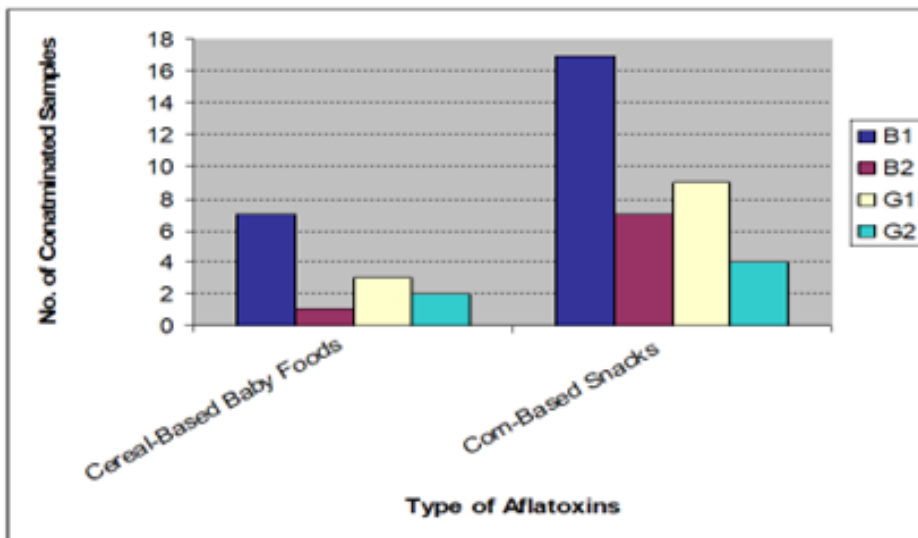


Figure 2: Type of Aflatoxins

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Biography

Gulsen Saleh Ahmed Saleh is the Head of clinical nutrition Department /57357 CCHE Professor of public Health /NNI. She did her Diploma of Environmental Sciences, Institute of Environmental Studies & Research, Ein- Shams University, Egypt.

e: gulsensaleh@yahoo.fr