Studies on mycotoxins in peanut arachis hypogaea) and their effects

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Groundnut or Peanut (Arachis hypogaea L. Fabaceae) is one of the most important leguminous crops allover the world. It is possesses a high nutritional and commercial value due to the presence of protein, fatty acids, carbohydrates and fibers in addition to vitamins, calcium and phosphorous. Groundnut protein is increasingly becoming important as food and feed sources.The objectives of the current study were:(1) Survey of fungal infected peanut in Egypt.(2) Isolation and identification of different pathogenic fungi associated with peanut seeds and pods.(3) Determination of aflatoxin produced by the isolated fungi.(4) Biological evaluation of Jatropha curcas L. extract against the hazards effects of aflatoxins produced by the isolated fungi in laboratories animals.Peanut pod and seed (Kernels) samples were collected from five different peanut growing governorates in Egypt (i.e. Aswan, Behira, Giza, Monofia and Sharkia) during 2006 season. Isolation and Identification of associated fungi was carried out on sterilized and un-sterilized of each peanut seed and on sterilized peanut pod samples within different governorate using two tests (i.e PDA and Blotter test). Detection of mycotoxin production on peanut samples was carried out using thin layer chromatography (TLC) and the quantity determination of aflatoxins was carried out using high performance liquid chromatography (HPLC). Jatropha curcas L. extract was biologically evaluated as protective against aflatoxin in laboratories animals.The results indicated that sum of 1000 fungal isolates belonging four fungal genera i.e. Aspergillus, Fusarium, Penicillium and Rhizopus were isolated from peanut seed samples. Only 70% of these isolates were detected by PDA medium and 30% were detected by Blotter test. On the other hand, contaminated peanut pods yielded 1400 fungal isolates belonging five fungal genera i.e. Aspergillus, Epicoccum, Fusarium, Penicillium and Rhizopus. Only 85% of these fungal isolates were detected by PDA medium and 15% were detected by Blotter test. Agar plate (PDA) medium was effective for the isolation of fungal colony in seed and pod than Blotter test method.Determination of aflatoxin revealed that three isolates of Aspergillus flavus isolated from Behira seed samples were positive producers of aflatoxins B1 and B2 while, only one isolate of A. parasiticus which isolated from these samples produced aflatoxins B1, G1, B2 and G2 in a concentration of 172.0, 1358.7, 418.38 and 364.6 µg/kg respectively.The protective effects of Jatropha curcas L. extract against aflatoxin toxicity in rats were investigated using Three-months old, -Sprague–Dawley male rats (110-145g). The results revealed that rats fed aflatoxin

contaminated peanut showed sever toxicological, histological and histochemical effects typical to those reported in the scientific literature of aflatoxicosis. Administration of the extract at dose level 5 mg/kg body weight succeeded to protect the laboratory animals against aflatoxin toxicity. The animal received the extract alone were comparable to the control which suggested the safety of extract. While the animal received the combined treatment of the extract and aflatoxin showed significant improvement in all biochemical parameters and the histological picture of the liver. Jatropha curcas L. extract was safe and can be used to reduce fungal growth and mycotoxin production as well as a protective against aflatoxin toxicity.