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Aflatoxin contamination of foods and feeds is a serious worldwide problem resulting either from improper storage of commodities or pre–harvest contamination in corn, peanuts, cottonseed and tree nuts, especially during drought years.

Aflatoxicosis results from ingestion of aflatoxins in contaminated food or feed. Aflatoxin poisoning is reported in all parts of world in almost all domestic and non domestic animals like cattle, horses, rabbits, and other non-human primates. Aflatoxicoses is also reported in humans in many parts of the world. Aflatoxins have been shown to be immunosuppressive, mutagenic, teratogenic and hepato-carcinogenic in experimental animals.

The essential oils and extracts of many plant species have become popular in recent years, and attempts to characterize their bioactive principles have gained momentum in many pharmaceutical and food processing applications.

Our study was conducted to evaluate some extracts of Parsley, Ginger, Turmeric and Rocket as antifungal for *Aspergillus flavus*. and evaluating the antioxidant activity of these plant extracts as well as investigating their protective ability against the harmful effect of aflatoxins.

The study can be divided into on two steps A- in vitro, B- in vivo. In vitro results revealed that the chemical composition of the plants under investigation obtained by GCMS revealed that the Chemical composition of the essential oil of parsley contained 21 components and was totally dominated by the presence of myristicin, apiol, copaene and α-pinene at percentages of 44%, 16.08%, 13.39 % and 6.91% respectively. The essential oil of ginger rhizomes consists of 38 components which were dominated mostly by four constituents represented about 79.13 % of the plant extract (zingibrene, δ -amorphen, α-curcumin and α-bisabolene at concentrations 37.65, 19.76, 11.32 and 10.40 respectively. The chemical composition of Turmeric essential oil in current analysis consisted of 39 component and was totally dominated by the presence of curcumene, valencene, bisabolene and zingibrene at percentages of 39.84, 18.04, 16.49 and 11.41 respectively. The rocket essential oil in the present

study consisted of 20 components and the main component was erucin which represented about 78.6%, followed by erucin nitrile and β-ionone at concentrations of 7.46 and 4.1 respectively.

The antifungal activity of the essential oil and the ethanolic extract of the four plants against *A. flavus* were examined using dry mycelium weight technique and revealed that rocket essential oil posses the strongest antifungal followed by parsley, turmeric and finally ginger. The antitoxogenic effect followed the same manner. The ethanolic extract however showed different behavior, turmeric essential oil posses the strongest antifungal followed by ginger, parsley and finally rocket. The antitoxogenic effect followed the same manner.

The antioxidant properties of both the essential oil and the ethanolic extract of the plant extracts were examined by two methods DPPH scavenging activity examination, and β- Carotene/linoleic acid assay. Both examinations showed that rocket had the highest antioxidant properties followed by parsley, turmeric and ginger.

The in vivo examination was conducted on male albino rats using parsley or rocket as protectors against aflatoxicosis. The results revealed that treatment with parsley for the group of animals receiving aflatoxin contaminated diet led to significant improvement in the measured blood parameters, significant reduction in serum cholesterol, LDL and Triglycerides and significant increase in serum HDL levels. Also led to significant reduction of AST, ALT, alkaline phosphatase and albumin levels were recorded. In addition, treatment with parsley or rocket for the group of animals receiving aflatoxin contaminated diet led to significant improvement of urea, uric acid, createnine, tumor markers, malondialdehyde, nitric oxide and SOD.

The obtained results suggested that using parsley or rocket extracts could improve the immune system due its strong antioxidant activity and could provide powerful protection against the harmful effects against aflatoxin induced physiological impairments.