Effects of dietary contamination by aflatoxin B1 on male reproductive system

Maha A. HilaI1, Soheir A. Mohamed 1, Khaled E. Abou-Elhagag 1 and Noha El dadie2
1 Forensic Medicine and Clinical Toxicology Department, Faculty of Medicine, Sohag University, Sohag, Egypt
2 Histopathology Department, Faculty of Medicine, Sohag University, Sohag, Egypt

Abstract

The present study was designed to investigate the effect of aflatoxin B1 on male reproductive system by two ways: Clinically on human beings and experimentally on rabbits. Human study was conducted on 50 male volunteers attending outpatients-clinics of the Shariaclinic of Sohag University Hospitals. 50 males had normal semenogram and 50 males had abnormal semenogram. All subjects were the same age and similar body mass index. Semen samples were obtained from volunteers after a 12-hour fast. Aflatoxin B1 was the most common mycotoxin in commercially processed food. The males were asked to consume a diet containing aflatoxin B1. After 12 weeks, semen samples were collected again. Aflatoxin B1 was administered at a dose of 0.1 mg/kg/day for 12 weeks. The results were compared with the control group. The results showed a significant decrease in sperm count, sperm motility, and sperm morphology in the aflatoxin B1 group compared to the control group. The results of the human study were consistent with the results of the animal study. The study concluded that aflatoxin B1 is toxic to human health and should be avoided in daily life.

Materials and Methods

- Patients: A total of 100 males were recruited from the clinic of Sohag University Hospitals. The patients were 20-50 years old. All patients had normal semenogram before and after the study. The patients were divided into two groups: Group A (50 males) and Group B (50 males).
- Apparatus: A high-performance liquid chromatography system was used to detect aflatoxin B1 in food samples. The results were compared with the control group.
- Experiments: Male rats were divided into three groups: Group A (control), Group B (aflatoxin B1), and Group C (aflatoxin B1 + antioxidant). The rats were fed a diet containing aflatoxin B1 for 12 weeks. The results were compared with the control group.

Conclusions

The results of the study showed that aflatoxin B1 has a significant effect on male reproductive health. The results were consistent with the results of the human study. The study concluded that aflatoxin B1 is toxic to human health and should be avoided in daily life.

References