

# Aflatoxin B<sub>1</sub> and Reproduction

## II. Gametotoxicity in Female Rats

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### ABSTRACT

It has been reported that aflatoxin B<sub>1</sub> impairs the reproductive performance of female animals. The mechanism of action of this toxin on the reproductive system was investigated. Female Druckerly Strain rats were administered aflatoxin B<sub>1</sub> at doses of 7.5 and 15.0mg/kg body weight through oral intubation for 21 days. The ovary was examined by counting superovulated oocytes and the follicles in 6mm thick sections. Estradiol and progesterone blood levels were determined. The body and sex organ weights of rats were recorded. There were significant reductions in the number of oocytes and large follicles in a dose dependent response. The blood hormone level and body and sex organ weight were significantly disturbed. We propose that aflatoxin B<sub>1</sub> is gametotoxic and deranges hormonal balance in affected animals. (*Afr J Reprod Health* 1997;1(2):85–89)

### RÉSUMÉ

#### L'aflatoxine B<sub>1</sub> et reproduction

#### II. La gametotoxicité chez les rats femelles

Il a été révélé que l'aflatoxine B<sub>1</sub> endommage la performance reproductive des animaux femelles. Le mécanisme d'action de cette toxine sur le système reproductif a été étudié et l'on a administré par intubation orale, de l'aflatoxine B<sub>1</sub> à des rats femelles de l'espèce Druckerly, à raison de 7.5 et 15.0mg/kg de poids de corps, et ce sur une période de 21 jours. L'ovaire était ensuite examiné en comptant les ovocytes à un stade d'ovulation accéléré et les follicules présents dans des sections de six microgrammes d'épaisseur. Les taux d'oestradiol et de progesterone dans le sang étaient déterminés et le poids des organes génitaux et de celui du corps des rats étaient enregistrés. Il y avait une baisse significative du nombre des ovocytes et des grands follicules lorsque l'on administrait la dose citée. Le taux d'hormones dans le sang, le poids des organes génitaux et de celui du corps étaient considérablement modifiés. Nous avançons donc que l'aflatoxine B<sub>1</sub> est gametotoxique et qu'elle trouble l'équilibre hormonal des animaux qui en sont affectés. (*Afr J Reprod Health* 1997;1(2):85–89)

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on follicle maturation is gonadal, involving secretory cells in the ovary alone, or involving the pituitary-hypothalamic-gonadal axis. On the basis of data obtained in this study, we propose that aflatoxin B<sub>1</sub> is gametotoxic in addition to general toxicity, and also deranges hormonal balance.

On the basis of results obtained in this study, dietary exposure to aflatoxin in this community may pose a great danger to reproductive health. Further studies are needed to ascertain the relationship between exposure to aflatoxin and human fertility in this community.

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