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TERATOGENIC EFFECTS OF AFLATOXIN B1 IN MICE EXPOSED IN EARLY AND LATE GESTATION

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There is a lack of information on the effects of aflatoxins on the fetus. Our aim was to evaluate the consequences of aflatoxin B1 (AFB1) administered during early and late gestation on fetal growth and development in the mouse. We administered groups of mice a single dose of 20mg/kg AFB1 on one of gestation days (GD) 7, or 13 and DMSO to different groups of mice on gestation day 7 or 13. Fetuses were collected on GD 18. AFB1 groups had a significant incidence of hypoplasia of the axial skeleton, metacarpals, metatarsal and phalanges. AFB1 treatment did not interfere with implantation, nor did it cause significant embryo resorption. However, it caused significant reduction in fetal bodyweight and increased frequency of growth restricted fetuses. The AFB1 group fetuses also had delay in maturity of the supraoccipital bone development, cervical and coccygeal vertebral hypoplasia, and poor ossification of the bones of the fore and hind paws. AFB1 treated mice also developed hypoplastic kidneys. Another major finding was the increased incidence of minor malformations, such as the presence of cervical ribs and sternal anomalies. AFB1 administered at preimplantation stages of development causes intrauterine growth restriction (IUGR) and augments minor malformation rates in mice. This treatment was found to be maternally non toxic. However, this low dose also resulted in significant fetal loss and IUGR when treatment occurred during both early and late gestation. These data show that late gestation is particularly susceptible to AFB1-induced fetal loss and IUGR in the mouse.