

Teratological Effects of Chlorpyrifos in Mice

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ABSTRACT

Introduction: Chlorpyrifos (CPF), an organophosphate insecticide, was evaluated for potential teratogenic effects in mice. A single oral dose of insecticide (i.e. 72, 36 18 or 9 mg/kg) was given to the pregnant females on gestation day6 (GD6). These doses correspond 50, 25, 12.5 and 6.25% to the calculated LD₅₀ value (144 mg/kg) for the pregnant mice. No signs of overt toxicity were observed at any of these doses.

Method and Materials: Fetuses recovered from 18, 36 and 72 mg/kg groups showed a variety of morphological defects i.e. microcephaly, hydrocephaly, agnathia, anophthalmia, enlarged meningio-encephalocoele, Spina-bifida, meromelia, micromelia, drooping wrists, rudimentary or kinky tails, round back, twisted spine, tortuous-limbs, flipper feet and sacral hygromas. Fetuses recovered from vehicle treated and 9mg/kg groups were apparently normal.

Results: Statistical analysis of the data based on single factor ANOVA and Duncan's Multiple Range Test have shown a dose dependent decrease in litter size ($P < 0.001$) along with averaged per litter: fetal weight ($P < 0.01$) and crown rump length ($P < 0.05$). The extent of ossification in embryonic skeleton decreased progressively with increased maternal CPF exposure.

Conclusion: Based on these findings we conclude that, if treated on GD6, a single oral dose of 18 mg/kg CPF (12.5% of LD₅₀) may lead to several craniofacial and skeletal anomalies in developing mice embryos, whereas its fetotoxic role is fairly dose dependent embryos.

Key Words: Chlorpyrifos, Teratogenesis, Feto-Toxicology.

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