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Histomorphometric study on the effect of low dose deltamethrin on the developing cerebellar cortex

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Abstract: Deltamethrin is a widely used type II pyrethroid-based insecticide. Studies have indicated that neonatal exposure to deltamethrin, even at relatively low doses, results in behavioral and neurological changes. In the present study, the effect of early neonatal exposure to low doses of deltamethrin on the histogenesis of the cerebellar cortex was investigated. Materials and methods: Sprague Dawley male pups were exposed to deltamethrin daily at a dose of 1 mg/kg via intraperitoneal injection from the 2nd to the 5th postnatal day and sacrificed on postnatal days 6, 14, and 21. Following intracardiac perfusion, the cerebellum was removed, embedded with paraffin wax, and serially sectioned. The thickness of the different layers of the vermal cerebellar cortex was measured using Image-Pro Plus software. Results: There were no significant differences in the measured thickness of the external granular, molecular, and internal granular layers between the deltamethrin-treated and the control animals in all age groups studied. Conclusion: In contrast to a previous study, the present study showed that neonatal administration of low dose deltamethrin did not significantly affect the morphogenesis of the cerebellar cortex.

Key words: Pyrethroid, deltamethrin, neonatal, cerebellar cortex

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