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Effects of the aqueous extract of *Phyllanthus niruri* Linn during pregnancy and lactation on neurobehavioral parameters of rats' offspring

Maciel da Costa Alves ¹, Diego Elias Pereira ², Rita de Cássia de Araújo Bidô ³,
Juliano Carlo Rufino Freitas ⁴, Cláudia Patrícia Fernandes Dos Santos ⁵,
Juliana Késsia Barbosa Soares ⁶

Affiliations

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Abstract

Ethnopharmacological relevance: *Phyllanthus niruri* L. (Phyllanthaceae) is a plant used in traditional medicine, mainly to treat kidney stones. However, the effects of maternal exposure to *P. niruri* remain poorly explored.

Aim of the study: The objective of this study was to investigate the effects of administration of aqueous extract of *P. niruri* (AEPN) during pregnancy and lactation, in maternal toxicity, reflex maturation, and offspring memory.

Materials and methods: Pregnant rats were divided into three groups (n = 8/group): Control (vehicle), AEPN 75, and AEPN 150 (each respectively treated with *P. niruri* at a dose of 75 and 150 mg/kg/day). The animals were treated via intragastric gavage during pregnancy and lactation. Weight gain, feed intake, and reproductive performance were analyzed in the mothers. In the offspring, the following tests were performed: Neonatal Reflex Ontogeny, Open Field Habituation Test and the Object Recognition Test in adulthood.

Results: Maternal exposure to AEPN did not influence weight gain, feed intake, or reproductive parameters. In the offspring, anticipation of reflex ontogenesis (time of completion) was observed (p < 0.05). During adulthood, the AEPN groups presented decreases in exploratory activity upon their second exposure to the Open Field Habituation Test (in a dose-dependent manner) (p < 0.05). In the Object Recognition Test, administration of the extract at 75 and 150 mg/kg induced significant dose-dependent improvements in short and long-term memory (p < 0.05).

Conclusion: Administration of the AEPN accelerated the reflex maturation in neonates, and improved offspring memory while inducing no maternal or neonatal toxicity.

Keywords: Behavioral assessment; Maternal toxicity; Memory; Neuromotor reflexes; *Phyllanthus niruri*; Rat offspring.

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