

CLOMAZONE, A COMMERCIAL HERBICIDE, INDUCES SUBCHRONIC TOXICITY IN WISTAR RATS

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INTRODUCTION: Brazil is one of the largest food producers in the world, standing out in the production of soybeans and sugarcane. To meet this demand, farmers use large amounts of pesticides and herbicides in crops. One of the herbicides used in soybean and sugarcane cultivation is clomazone (CLZ), which has shown evidence of toxicity in various species. However, data on its systemic toxicity remain unclear. **OBJECTIVE:** To evaluate the subchronic toxicity of clomazone in rats. **MATERIALS AND METHODS:** Animals were divided into four groups: control (distilled water) and CLZ 15, 30, and 60 mg/kg. Treatments were administered orally for 28 consecutive days (OECD 407). Behavioral tests were performed, and after treatment, blood, urine, and tissues were collected for further analyses. **RESULTS AND CONCLUSION:** Treatment with 60 mg/kg of CLZ increased grooming behavior ($p<0.05$, ANOVA/Bonferroni) and GABA levels in the hippocampus and hypothalamus ($p<0.05$, ANOVA/Bonferroni), reduced relative kidney mass ($p<0.05$, ANOVA/Bonferroni), and caused morphological alterations in the spleen and adrenal glands ($p<0.05$, ANOVA/Bonferroni). An increase in mitochondrial complex IV activity in the liver was observed in the CLZ 30 mg/kg group ($p<0.01$, ANOVA/Bonferroni), and increased renal non-protein thiol levels were found in the CLZ 15 mg/kg group ($p<0.05$, ANOVA/Bonferroni). These findings indicate potential nephrotoxic, neurotoxic, and endocrine-disrupting effects caused by CLZ and highlight the need for further studies to better understand the observed effects.

KEYWORDS: Clomazone; Neurotoxicity; Herbicide.

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