

EFFECTS OF THE HERBICIDES GLYPHOSATE AND 2,4-DICHLOROPHENOXYACETIC ACID (2,4-D) ON HEMATOLOGICAL PARAMETERS IN WISTAR RATS

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INTRODUCTION: Pesticides such as glyphosate and 2,4-D are widely used to control invasive plants and other harmful organisms. Glyphosate is a non-selective systemic herbicide, while 2,4-D is a selective herbicide for weed control. Experimental research with these pesticides generally does not replicate actual occupational exposure, which involves lower concentrations and prolonged exposure. **OBJECTIVE:** To evaluate the effects of glyphosate and 2,4-D herbicides administered by inhalation on the hematological parameters of Wistar rats. **MATERIAL AND METHODS:** Thirty-six 60-day-old male Wistar rats were randomly assigned to three groups (12 animals per group): C (control, water inhalation), G (glyphosate, 0.318 mg/L) and 2,4-D (0.014 mg/L), with 4h daily exposure, 5 times a week, for 8 weeks, reproducing the conditions of occupational exposure. After euthanasia due to isoflurane overdose, blood samples were collected for hematological analysis (CBC and blood smear). Non-parametric data were presented as medians and quartiles and compared using the Kruskal Wallis test, followed by Dunn's test. **RESULTS:** Group G showed a significant increase in the parameters of red blood cell count (p-value 0.023), hemoglobin concentration (p-value 0.019), mean corpuscular volume (p-value 0.001), mean corpuscular hemoglobin concentration (p-value 0.011) and red blood cell distribution amplitude (p-value 0.001). The 2,4-D group showed no significant changes in the blood count when compared to group C. The distension slides were consistent with the findings described in the blood counts. **CONCLUSION:** Alterations in the red series may indicate a change in the pattern of hematopoiesis. The findings of this study suggest that exposure to glyphosate may lead to changes in the morphology and oxygen-carrying capacity of the blood, and reinforce the need for further studies to understand the mechanisms underlying these changes and to assess the potential risks to human health in the long term.

Keywords: glyphosate; 2,4-D; hematology; rats; occupational exposure

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