

PROMETHAZINE PROVOKES BEHAVIORAL ALTERATIONS AND INDUCES OXIDATIVE STRESS IN PLANARIANS

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INTRODUCTION: Promethazine is a first-generation H1 antihistamine with wide distribution in the central nervous system, which accounts for its sedative effect and other neurological actions that are not yet fully understood. **OBJECTIVES:** Therefore, the aim of this study was to evaluate the effects of promethazine on behavioral and oxidative stress parameters in planarians (*Girardia tigrina*), in order to better understand the potential neurobiological effects of this drug. **MATERIALS AND METHODS:** The use of this animal model does not require approval from the Ethics Committee on Animal Use, as planarians belong to the phylum Platyhelminthes, in accordance with the Brazilian Guidelines for the Care and Use of Animals in Research Activities (RN 55/2022). Planarians were pre-incubated in the presence of promethazine for 1 hour at concentrations of 5 to 50 μM , and subsequently the behavioral and oxidative stress parameters were assessed. The oxidative stress parameters measured were the malondialdehyde (MDA) levels, sulfhydryl content, reduced glutathione (GSH) concentrations and superoxide dismutase (SOD) activity. Furthermore, the behavioral parameters evaluated were the average speed, average acceleration, exploration rate, mobility rate and distance traveled, which were analyzed using the ToxTrac software after recording the locomotor activity of each planarian for 5 minutes. **RESULTS:** It was observed that planarians exposed to lower concentrations of promethazine (5 and 10 μM) presented an increase in average speed, average acceleration, exploration rate, mobility rate, and distance traveled. On the other hand, at higher drug concentrations, especially 50 μM , planarians showed a reduction in these parameters, indicating decreased locomotor activity. It was also found that exposition to promethazine significantly increased MDA levels, GSH concentrations and SOD activity, without altering sulfhydryl content, suggesting lipid peroxidation and changes of antioxidant activity in planarians. **CONCLUSIONS:** It is concluded that promethazine significantly altered planarian behavior, with low concentrations leading to increase locomotor activity, while higher concentrations caused a decrease. These data may be, at least in part, related to oxidative stress induction. Finally, the results suggest that promethazine exhibits strong neurobiological activity, with potential neurotoxic effects in planarians.

KEYWORDS: Promethazine; Neurotoxicity; Planarians; Behavior; Oxidative stress.

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