TOXIC EFFECT OF IVERMECTIN ON ANTIOXIDANT ENZYME ACTIVITY AND CELLULAR METABOLIC CAPACITY IN *Drosophila melanogaster*

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INTRODUCTION: Ivermectin, a widely used antiparasitic, was been associated with the treatment of COVID-19, after initial in vitro laboratory tests suggested that the drug could block the proliferation of the virus. However, health organizations do not recommend the use of ivermectin in the treatment of COVID-19, as the use of this dewormer does not have the power to help in the treatment of this pathology. In addition, it can induce adverse cellular effects when present in inadequate concentrations in the organism. In this context, due to the indiscriminate use of this drug suggested in the treatment of COVID-19, and because it may present toxicity, it is necessary to determine and emphasize the toxicological dangers of ivermectin. **OBJECTIVE:** To evaluate the toxic effects of exposure to ivermectin using the model organism of *Drosophila melanogaster*. **MATERIAL AND METHODS:** Flies of both sexes, from 1 to 4 days of age, containing 50 flies in each group, exposed to a standard diet, divided into 6 groups:

(1) Control, containing ethyl alcohol at a final concentration of 0.5%, (2) ivermectin 0.003 μM, (3) ivermectin 0.01 μM, (4) ivermectin 0.03 μM, (5) ivermectin 0.1 μM, and (6) ivermectin 0.3 μM, dissolved in ethyl alcohol. The exposure lasted 48 hours. At the end of the exposure, were used to evaluate the changes in toxicity indicators, where the activity of antioxidant enzymes Superoxide dismutase (SOD) and catalase (CAT) was evaluated, and the cellular metabolic capacity. The results were analyzed using unidirectional ANOVA, followed by Bonferroni post hoc analysis. The GraphPad Prism8 program was used, considering a significant difference with the control group, $P < 0.05$. **RESULTS AND CONCLUSION:** Statistical analysis (one-way ANOVA) revealed a significant effect for the interaction factor, showing that 48-hour exposure to ivermectin decreased the activity of SOD [$F_{(5,19)} = 4,360$; $P < 0.05$], and CAT [$F_{(5.17)} = 9.227$; $P < 0.05$] enzymes, and decreased cellular metabolic capacity [$F_{(5.24)} = 11.42$; $P < 0.05$]. Exposure to ivermectin decreased the activity of SOD and CAT enzymes and cellular metabolic capacity. Thus, it decreased the antioxidant defenses and caused cell damage, causing a potential toxic effect on *Drosophila melanogaster*.

Keywords: Drug; Antiparasitic; Toxicity.

Acknowledgment: Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) e Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq).