

PROTECTIVE EFFECT OF ORA-PRO-NOBIS SUPPLEMENTATION AGAINST PARAQUAT-INDUCED TOXICITY IN AGED *Drosophila melanogaster*: BIOCHEMICAL AND FUNCTIONAL EVIDENCE

Jackeline De Miranda Schmidt¹; Debora Pulcinelli¹; Eliana Jardim Fernandes²; Maria Denise Schimit¹; Fernanda Barbisan¹; Ivana Beatrice Mânica da Cruz³; Verônica Farina Azzolin³; Elize Musachio¹.

¹Universidade Federal de Santa Maria, Santa Maria, Rio Grande do Sul; ²Universidade Federal do Pampa, Itaqui, Rio Grande do Sul; ³Fundação Universidade Aberta da Terceira Idade, Manaus, Rio Grande do Sul.

INTRODUCTION: Human aging is characterized by increased vulnerability to toxic agents due to reduced endogenous antioxidant defenses and increased production of reactive oxygen species (ROS), leading to oxidative stress that culminates in cellular damage, such as lipid peroxidation. Paraquat is a widely used herbicide whose toxicity is associated with the induction of oxidative stress, and is a well-established model for toxicological studies. In this context, dietary supplementation with ora-pro-nobis (OPN), a plant rich in antioxidant bioactive compounds, appears as a promising strategy to minimize toxicological effects and promote longevity. **OBJECTIVE:** To evaluate the effects of dietary supplementation with OPN on mortality rate, ROS levels and lipid peroxidation of aged *Drosophila melanogaster* after acute exposure to Paraquat. **METHODOLOGY:** The flies were fed a standard diet from the 1st to the 38th day of life, and then they were separated into four groups called: control and Paraquat (not supplemented) and OPN and OPN + Paraquat (standard diet supplemented with 10% OPN powder). At 45 days, the already old flies from the Paraquat group (without previous supplementation) and OPN + Paraquat were placed in a medium containing Paraquat diluted in sucrose for 24 hours. Following this, the total number of dead flies was counted and the survivors were euthanized for sample preparation. The supernatant obtained was used to quantify the levels of ROS and lipid peroxidation. **RESULTS AND CONCLUSION:** The OPN + PQ group showed a reduction of 82.12% in ROS levels and 52.70% in lipid peroxidation compared to the Paraquat group. The survival rate increased from 34% in the Paraquat group to 66% in the OPN + PQ group. Despite the methodological limitations inherent to the model, our results demonstrate the protective action of OPN against toxic compounds, reinforcing its potential as a functional agent in the prevention of oxidative damage induced by xenobiotics. These findings open perspectives for the use of the plant in nutraceutical formulations with potential preventive application in public health contexts and occupational exposures.

Keywords: Antioxidant; *Drosophila melanogaster*; Human aging; Oxidative stress; Paraquat.