RESVERATROL RESTORES CELLULAR HOMEOSTASIS OF *TOXOPLASMA GONDII*-INFECTED MICROGLIA

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INTRODUCTION: Toxoplasmosis is a common disease worldwide. It is caused by *Toxoplasma gondii* infection and contaminated water consumption can be the main source of this protozoan. This obligate intracellular parasite could reach the brain infecting microglia, which carry it unwittingly to the central nervous system causing the well-known neurotoxoplasmosis. Additionally, another problem that can be mentioned is the inability to reach the parasite and the lack of specificity of the medications, which indicates the necessity of developing new alternatives to treatment. Resveratrol, a natural product found in grapes and peanuts, could act with anti-neuroinflammatory and antiparasitic properties. OBJECTIVE: Investigate the capacity of resveratrol in restoring cellular homeostasis of *T. gondii*-infected microglia. MATERIALS AND METHODS: Microglia (BV-2 cell line) were infected with the *T. gondii* RH strain for 3 hours and treated with resveratrol for 2 hours. Cell viability, the release of dsDNA and reactive oxygen species (ROS) levels were measured through colorimetric and fluorometric assays. Results were statistically analyzed using GraphPad Prism software via one-way ANOVA followed by the Tukey test *post-hoc*. RESULTS: *T. gondii*-infected microglia presented elevated ROS and extracellular dsDNA levels compared to control. This could be due to the intracellular parasite replication, causing cell membrane disruption, consequently decreasing cell viability. However, resveratrol treatment was able to restore cell viability compared to the infected control group. ROS levels (concentration-dependent manner) and extracellular DNA levels were also decreased at resveratrol addition. These findings indirectly suggest a possible resveratrol antiparasitic action, by reestablishing experimental conditions similar between the negative control and treated-infected microglia in the cell viability. CONCLUSION: We suggest that resveratrol may

be promising in treating neurotoxoplasmosis, through a cellular homeostasis recovery. Further investigations must be carried out to completely confirm this hypothesis.

Keywords: Neurotoxoplasmosis; Polyphenol; Brain; RH strain.

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