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In vitro neuroprotective effect of avocado oil supplementation on neural aged-cells exposed to cortisol

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Background & Objective: Aging brings with it its own age concerns; they are often associated with stress and the development of emotional issues such as anxiety and depression. Many authors have described stress as a possible trigger for the development of a series of psychiatric and metabolic pathologies, and the hormone cortisol at high levels seems to be the link between stress and the development of dysfunctions. In view of the context already presented that older people, due to biological and psychosocial issues, are more stressed, that stress is a trigger for chronic diseases and that this population in most cases consumes a great quantity of drugs, it is justified the search for nutritional elements that can contribute to the fight against stress. One of the potent nutritional elements is a much-consumed fruit in America's avocado (Persea americana). It contains a rich nutritional matrix with functional properties, which makes it relevant to carry out *in vitro* studies on the potential effect of supplementation with avocado oil in a stress neuronal model. Therefore, the objective of this study was to evaluate *in vitro*, the potential neuroprotective effect of avocado against neural aged-cells (SH-SY5Y) exposed to cortisol.

Methods: The effect of supplementation of SH-SY5Y neural cell culture with avocado pulp oil exposed to cortisol was evaluated. The following parameters were analyzed in 24 and 72 hours: viability, rate of cell proliferation and variables associated with oxidative stress and apoptotic markers.

Results: Avocado showed a protective effect against exposure of neural cells to cortisol. Increasing their viability and proliferation and reversing apoptosis caused by cortisol, observed in the decline of the protein levels of BAX, BCL-2 and caspase 3 and 8, as well as the genotoxic effect observed on 8-hydroxy-2'-deoxyguanosine as an increase in antioxidant enzymes such as SOD, CAT and GPX.

Conclusion: Despite the methodological *in vitro* protocol limitations, results suggested that avocado oil could have neuroprotective effect against neural aged-cells exposed to cortisol. These data could be relevant to development of a supplement that helps to decrease stress consequences, mainly in the elderly.

Biography

Verônica Farina Azzolin holds a degree in Biomedicine from the Santo Angelo Higher Education Institute in 2013 and Master's degree in Pharmacology from Federal University of Santa Maria. She is a PhD student in Pharmacology at Federal University of Santa Maria. She conducts research in the Laboratory of Biogenomics in the area of toxicogenetics, nutrigenetics and pharmacogenetics. She has experience with cell culture of cancer cells and stem cells, with techniques of molecular biology, real time PCR, flow cytometry, DNA damage, and biochemical, spectrophotometric and fluorimetric analyzes for the evaluation of oxidative stress. She has also worked with the *in vivo* model of Drosophila melanogaster with electromagnetic fields. She has experience in the area of clinical analysis.

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