

EVALUATION OF FREE AND NANOSTRUCTURED AÇAÍ EXTRACT IN BRAIN STRUCTURES OF MICE EXPOSED TO CORTICOSTERONE

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INTRODUCTION: Mental health is a topic that requires constant scientific debate. It is estimated that more than 300 million people suffer from depression worldwide. Medications used to treat depression can cause side effects, hence the interest in finding new therapeutic alternatives. Natural health products (NHP) have bioactive properties that can be used to treat diseases. However, these agents are susceptible to degradation. Nanotechnology can be used as a tool to protect the chemical matrix of these products. **OBJECTIVE:** To investigate the effect of free and nanoemulsified açai extract in reversing oxidative damage caused by corticosterone exposure in mice brain structures. **MATERIAL AND METHODS:** A total of 140 male Swiss mice were divided into 14 groups. After 7 days of acclimatization, corticosterone (20 mg/kg/10mL) was administered subcutaneously for 21 days. Treatments with free and nanostructured açai extract (0.5, 1.0 and 1.5 mg/kg/10mL) were administered orally during the last 7 days of exposure to corticosterone. The animals were euthanized by cardiac puncture and then the brain structures were removed for analysis of oxidative parameters. Adrenal size was also analyzed. Samples of prefrontal cortex and hippocampus were tested. It was evaluated the nitric oxide (NO) production and total levels of reactive oxygen species (ROS). The results obtained were evaluated by one-way or two-way analysis of variance (One-way or Two-way ANOVA), followed by Tukey's post-hoc test. Values were considered significant when $p < 0.05$. **RESULTS:** Corticosterone exposure induced the decrease of adrenal volume but did not change any of the parameters evaluated in hippocampus. However, this agent increased mainly NO production in animals' cortex. Free açai at 1.5 mg/kg/10mL was able to decrease levels of NO compared to corticosterone group. Açai nanostructured at 1.5

mg/kg/10mL also was able to reduce levels of NO in comparison to the animals exposed only to corticosterone. CONCLUSION: The obtained results demonstrate that acai, free or nanostructured, could act as a potential neuroprotector agent in prefrontal cortex, reversing the imbalance induced by corticosterone.

Keywords: Natural health product; Nanotechnology; Depression.