EFFECTS OF ROYAL JELLY SUPPLEMENTATION ON CORTICOSTERONE LEVELS AND OXIDATIVE STRESS BIOMARKERS IN BRAIN AND CEREBELLUM OF RATS SUBMITTED TO CHRONIC STRESS

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The stress is a phenomenon that triggers metabolic adaptations in order to maintain homeostasis. Chronic stress conditions can be deleterious, leading to oxidative stress and neuropathologies. In this way, recently, there was an increase in studies investigating functional foods or supplements that can be used to minimize these alterations. The Royal Jelly (RJ) is a natural biological substance secreted by the hypopharyngeal gland of young worker honeybees (Apis mellifera L) with various biological activities. Thus, the objective of this study is to evaluate the effects of RJ supplementation on rats submitted to chronic stress induced by cold and restraint, for this purpose blood corticosterone levels and oxidative stress biomarkers in brain and cerebellum were evaluated. Wistar rats were divided into three groups: No Stress (NS), Stress (S) and Stress supplemented with RJ (SRJ) (200mg/kg) administered by oral gavage for 14 days. From the seventh day the animals were submitted to cold (10 °C) and restraint stress for 120 minutes each. The biochemical parameters of total antioxidant capacity, lipid peroxidation, reduced glutathione (GSH) levels and activity of the enzymes superoxide dismutase (SOD), glutathione peroxidase (GPX), glutathione reductase (GR) and glucose-6-phosphate dehydrogenase (Glc6PDH) were evaluated in cerebellum, cerebral cortex, striatum and hippocampus. Blood was collected for corticosterone analysis and glycemia determination. The RJ supplementation was able to prevent the increase of the corticosterone level and maintained the glycemia, both elevated in the stress group. The SRJ group also demonstrated the highest total antioxidant capacity, decreased lipid peroxidation and increased GPx and Glc6PDH activity in the areas evaluated. In conclusion, the RJ potentiated the antioxidant defenses of the nervous system in rats submitted to chronic stress, showing adaptogenic and antioxidant activity, highlighting RJ as a potential neuroprotective supplement.

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