ADAPTOGENIC AND ANTIOXIDANT POTENTIAL OF ROYAL JELLY IN LIVER OF RATS SUBMITTED TO CHRONIC STRESS


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The stress adaptative response is a phenomenon characterized by psychophysiological adaptations of the organism in order to restore the homeostasis. Chronic stress can cause deleterious effects to the organism and natural products with adaptogenic activity can minimize or even prevent these negative consequences. Royal jelly (RJ) is a compound produced by hипофарингеal glands of worker bees, that has multiple biological activities. The aim of this study was to evaluate the antioxidant and adaptogenic properties of royal jelly in the liver of rats chronically stressed by immobilization and cold. Wistar rats were divided into three groups: No Stress (NS), Stress (S) and Stress supplemented with RJ (200 mg/kg) (SRJ). The animals were supplemented for 14 days and submitted to restraint and cold (10° C) stress for 120 minutes, respectively, for 7 days. Blood was collected for the quantification of corticosterone and glucose levels, and the liver was homogenized for biochemical analysis of oxidative parameters. The corticosterone and glucose levels increased in the E group while the supplementation prevented the increase of this hormone and maintained blood glucose, showing a potential anti-stress effect. Stress increased lipid peroxidation, glutathione peroxidase, glutathione reductase (GRD) and G6PDH activity while decreased superoxide dismutase activity, GSH and total antioxidant capacity, indicating oxidative damage in the liver. Furthermore, supplementation with RJ showed an increase of SOD activity, GSH and total antioxidant capacity and a decrease of GRD activity and lipid peroxidation, demonstrating the antioxidant potential of RJ, once this honeybee product has several substances that can neutralize free radicals. In conclusion, stress induced by immobilization and cold increases corticosterone level and induced hepatic oxidative damage, while the supplementation with RJ attenuated this damage. Thus, these results demonstrated the adaptogenic and antioxidant potential of RJ, which may minimized the deleterious effects induced by chronic stress.

Acknowledgements: PROPP/UFU, FAPEMIG and CNPq.

Keywords: Stress, antioxidant and royal jelly.