BLUEBERRY EXTRACT PREVENTS NEUROCHEMICAL ALTERATIONS OBSERVED IN METABOLIC SYNDROME

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Metabolic syndrome (MetS) is characterized by a combination of cardiovascular risk factors including hyperglycemia, insulin resistance, visceral obesity, dyslipidemia and hypertension. Studies suggest that the increased energy intake can enhance the production of reactive oxygen species, which has been directly related to the complications of MetS and to the development of neurological and neuropsychiatric disorders such as depression. Bioactive compounds of blueberry (Vaccinium virgatum) have demonstrated beneficial effects to alterations observed in the MetS. Therefore, in the present study we investigated the effect of blueberry fruit extract on behavioral and oxidative stress parameters in the hippocampus of mice submitted to an experimental model of MetS induced by a highly palatable diet (DHP). Mice C57/BL6 were divided into 4 experimental groups: (1) received standard chow and saline orally, (2) standard chow and blueberry extract (200 mg/kg, p.o), (3) DHP and saline orally, (4) DHP and blueberry extract (200 mg/kg, p.o). The animals were treated for 150 days. Our results showed that the blueberry extract was able to reduce the levels of thiobarbituric acid reactive substances (TBARS) in the hippocampus of animals submitted to DHP. In contrast, no differences were observed in the total thiol content, activity of the antioxidant enzymes catalase (CAT) and superoxide dismutase (SOD). In addition, the DHP fed animals showed a significant increase in immobility time in the forced swimming test and blueberry prevented this alteration. However, no changes were observed in the ambulatory behavior, as well as anxiolytic profile of these animals. Altogether, our results suggest that blueberry extract, chronically administered, showed antidepressant-like effects and antiperoxidative in an animal model of MetS, which can contribute to the development of new pharmacological intervention in patients with this syndrome.

Keywords: Metabolic Syndrome. Blueberry. Neurochemical parameters.