L-tyrosine Administration Altering of BDNF and NGF Levels in the Brain of Rats Treated with Antioxidants

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INTRODUCTION: Tyrosinemia type II is a rare disease caused by a mutation in the gene encoding the enzyme tyrosine aminotransferase (TAT), which is responsible for the metabolism of tyrosine. Thus, there is an accumulation of tyrosine and/or their toxic metabolites. Studies show that several inborn errors of metabolism have in their clinical cognitive deficit and oxidative stress including tyrosinemia type II and the neurotrophin levels are related to this deficit these being crucial to memory and learning. **OBJECTIVE:** Whereas patients with tyrosinemia type II have neurological impairment and that this involvement may be related to oxidative stress the objective of this study was to evaluate the BDNF and NGF levels in the brain of rats treated with antioxidants. **MATERIAL AND METHODS:** The animals were divided into 3 groups: control, L-tyrosine, L-tyrosine + N-acetylcysteine (NAC) + deferoxamine (DFX). The administration occurred the 7th to the 28th day of life of the animal being administered L-tyrosine (500 mg/kg of body weight) intraperitoneally 12/12 hours and NAC (20 mg/kg) subcutaneous 12/12 hours and DFX (20 mg/kg) once every other day subcutaneous. Twelve hours after the last administration the animals were euthanized and structures cortex, hippocampus and striatum were separated for analysis. **RESULTS AND DISCUSSION:** BDNF levels in the hippocampus were decreased in L-tyrosine group and also in the striatum L-tyrosine groups and L-tyrosine + NAC + DFX groups. NGF levels decreased in the striatum in L-tyrosine group and antioxidants reversed this change. **CONCLUSION:** The results show that chronic administration of L-tyrosine decreased neurotrophins levels in rat brain and that this change may be present in the memory and learning. And the antioxidants used at least in part aided in restoration of these neurotrophins.

Keyword: neurotrophins, antioxidants, tyrosinemia type II.
Sponsorship: FAPESC, CNPq, UNESC and CAPES.