Effect of Chronic Administration of L-Tyrosine on Enzyme Activity of the Krebs Cycle in Rat Brain Treated With Omega-3

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Introduction: The tyrosinemia type II is an inborn error of metabolism caused by a mutation in a gene encoding the enzyme tyrosine aminotransferase leading to a accumulation of tyrosine in the body. Whereas the mechanisms of brain injury are not well known, that studies indicate the involvement of changes in energy metabolism and oxidative stress in the pathophysiology of tyrosinemia, and there is an appropriate treatment. **Objectives:** The main aim of this study was to investigate the effects of chronic administration of tyrosine on enzyme activity citrate synthase and succinate dehydrogenase in brain of rats treated with omega-3. **Material and Methods:** The animals were divided into 4 groups: control (tween + water), L-tyrosine (L-tyrosine + water), omega-3 (omega-3 + tween) and L-tyrosine + omega-3. The treatment were realized in the 7th to the 28th day of life of the animal, being administered L-tyrosine (500 mg/kg body weight) intraperitoneally in 12/12 hours and omega-3 (0.1 g/kg body weight) by gavage only once a day. Twelve hours after the last administration, the animals were euthanized and the structures, cortex, hippocampus and striatum were separated for analysis. **Results and Discussion:** There was a decrease in the enzyme citrate synthase activity in the three analyzed structures when exposed to tyrosine, a reversal of damage in the hippocampus and cortex structures treatment with omega-3 and a partial reversal the striatum. The succinate dehydrogenase enzyme had a decreased activity in the hippocampus and striatum in the tyrosine group, and this change has been regularized with omega-3. **Conclusions:** From these results, we suggest that chronic administration of L-tyrosine causes alterations in enzymes do Krebs cycle, in cortex, hippocampus and striatum, and omega-3 administration can be a potent adjuvant treatment for patients with tyrosinemia type II.

Keywords: Krebs cycle, omega 3, tyrosinemia type II.
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