EFFECT OF ACUTE AND CHRONIC TREATMENT WITH METHIONINE AND/OR METHIONINE SULFOXIDE ON ACETYLCOLINESTERASE ACTIVITY IN LYMPHOCYTES FROM YOUNG RATS

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High levels of methionine (Met) and its metabolites such as methionine sulfoxide (MetO) have been found in genetic abnormalities. Hypermethioninemic patients may have varying degrees of neurological and liver dysfunction, whose pathophysiology is not well understood. Acetylcholine has played an important role in anti-inflammatory cholinergic pathway and it is modulated by acetylcholinesterase (AChE), which could be considered an important marker of systemic inflammation. Thus, the aim of this study was to investigate the acute and chronic effect of Met and/or MetO on AChE activity in lymphocytes of young rats. In chronic treatment, Wistar rats were treated daily with twice subcutaneous injection of saline (control), Met (0.2 – 0.4 g/Kg), MetO (0.05 – 0.1 g/Kg) and the association between these (Mix) from the 6th to the 28th day of life and were submitted to euthanasia 12 h later. In acute treatment, the animals (29 days-old) received a single injection of Met, MetO and/or Mix and were euthanized 1 and 3 h after administration. After this, total blood was collected for isolation of lymphocytes and the AChE activity was determined. Our results showed that after 3h the treatment the AChE activity was increased in lymphocytes the rats that received MetO and Mix when compared to others groups (P<0.05). In relation to chronic treatment, our results also demonstrated an increased in the activity of this enzyme in lymphocytes the rats treated with MetO and Mix (P<0.05). Acetylcholine is known to have antiinflammatory actions and suppress the production of pro-inflammatory cytokines, in this line is plausible suggest that high activity of AChE could reduce acetylcholine levels suggesting an association of Met metabolites with inflammation. These results may help to understand the mechanisms involved in the pathogenesis of the alterations present in hypermethioninemia.

Key Words: Methionine, Methionine Sulfoxide, Acetylcholinesterase.

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