Effect of ethylmalonic acids on acetylcholinesterase activity and expression in young rats

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Introduction

Patients suffering from short-chain acyl-CoA dehydrogenase deficiency (SCADD) and ethylmalonic encephalopathy (EE) present high concentrations of ethylmalonic acid (EMA) in tissues and body fluids. They present neurological heterogeneous alterations, including developmental delay and neuromuscular symptoms. In this work we evaluate the in vivo and in vitro effects of EMA on acetylcholinesterase (ACHE) activity and its expression in cerebral cortex, striatum and hippocampus.

Materials and methods

In vitro experiment

In vivo experiment

ACHe expression by RT-PCR

Results

It was observed that ACHE activity was increased in cerebral cortex in both in vivo and in vitro experiments, when compared to control group. Regarding to ACHE expression, it was not observed any difference between groups. Taken together, the results presented herein demonstrate that EMA caused alterations on ACHE activity in cerebral cortex of young rat, which could collaborate to the brain damage found in patients affected by SCADD and EE.

References

4) Schuck et al Ethylmalonic Acid Modulates Non-Av-AChE Activity and mRNA Levels in Rat Cerebral Cortex. Synapses. 2012.