Acute D-Galactose Administration Enhances Acetylcholinesterase Activity In Cerebral Cortex Of Rats In An Age-Dependent Manner

Morais, F.A.¹; Rodrigues, L.B.¹; Ghedim, F.V.²; Fraga, D.B.²; Bristot, S.F.¹; Streck, E.L.¹; Ferreira, G.C.¹; Zugno, A.I.²; Schuck, P.F.¹

¹Laboratório de Erros Inatos do Metabolismo, UNESC, SC, Brasil; ²Laboratório de Neurociências, UNESC, SC, Brasil.

Introduction: Galactosemia is characterized by a deficiency in one of the three enzymes involved in the galactose metabolism. The main clinical findings observed in patients include developmental delay, and learning and memory disabilities, whose pathophysiology is still unclear. **Aim:** We investigated the in vivo and in vitro effects of galactose on acetylcholinesterase (AchE) activity in cerebral cortex, striatum and hippocampus of developing rats. **Methods:** For the in vivo experiments, rats with 15, 30 and 60-days old (each group containing six rats) were killed 1h after a single of galactose (5 µmol/g; subcutaneously) or saline solution (control group). For the in vitro experiments, galactose was added at increasing concentrations to the incubation medium (0.1 – 5 mM). **Results:** Acute galactose administration did not alter AchE activity in cerebral cortex, hippocampus and striatum of suckling rats (15-day-old). On the other hand, when administered to older rats, galactose provoked a significant increase of AchE activity in cerebral cortex. High doses of galactose (5 mM) **in vitro** also increased this enzyme activity in cerebral cortex of 30-day-old rats. **Conclusion:** Our data demonstrate that acute galactose administration provokes an age-dependent increase in AchE activity in cerebral cortex of rats.

Keywords: galactose, galactosemia, acetylcholinesterase

Supported by: UNESC and CNPq.