# Regulation Of Glycogen Metabolism By Lithium In Astrocytes.

Almeida, A.S.[1], Velez, B.S.F[1]., Silva, G.G.N., Ramirez, J[2].; Montero-Lomelí, M[1].

[1]Instituto de Bioquímica Médica, Programa de Biologia Molecular e Biotecnologia, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil.
[2]Instituto de Fisiologia, Universidade Nacional Autónoma do México, Mexico.

The goal of this study is to investigate a possible insulin like effect of lithium in a primary culture of mouse astrocytes, as our previous studies of global transcription show that the insulin pathway is significantly modified when astrocytes are treated with 2mM LiCl for 3 days. As the insulin pathway activates the synthesis of glycogen by dephosphorylation of glycogen synthase we decided to study the glycogen content and the state of phosphorylation of the glycogen synthase in lithium treated astrocytes. Results show that after a 3 days treatment with 2mM LiCl, glycogen content is lower and glycogen synthase is more phosphorylated in lithium treated astrocytes than in control cells. To test if lithium response is immediate, now we are studying its effect after 2, 24, 72 and 120 hours of treatment in the same parameters. We have further studied if lithium treated astrocytes respond to insulin. For this purpose astrocytes were conditioned to 2mM lithium for 3 days and fasted for glucose during 2 hours depleting total glycogen. Then astrocytes were treated with 5mM glucose with or without 1µg/ml insulin or 2mM LiCl. Results show that both treatments have a tendency to increase the glycogen content when compared with control cells treated with glucose alone, however glycogen synthase was not dephosphorylated. Ours results suggest that lithium induces phosphorylation of glycogen synthase and reduces the glycogen content in a long-term treatment.

Keywords: Astrocytes; Glycogen; Glycogen Synthase; Lithium.

Supported by CNPq, FAPERJ.