

## LITHIUM AFFECTS GLYCOGEN CONTENT IN RODENT BRAIN

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Lithium is widely used for the treatment of bipolar disorder, but the precise mechanism of action remains unknown. Lithium exerts an “insulin-like” effect in hepatocytes and muscle cells at higher concentrations than the therapeutic range. In this study, we have first investigated the effect of lithium on the glycogen content in rat brain after six weeks of lithium treatment. Results show that the total glycogen content varied in treated animals, and was higher in rats with higher lithium serum concentrations ( $R^2=0,84$ ). The control group exhibited higher glycogen content than treated animals, however at the end of treatment their weight was 75 % higher than that of those treated with lithium, not allowing direct comparison between the two groups. Glycogen represents the major brain energy reserve, which is located mainly in astrocytes. In order to unveil the mechanism of lithium's action; we studied the effect of lithium on a primary cultured of murine astrocytes. For this purpose, astrocytes were glucose starved for 2 hours and refeed with 5mM glucose and increasing lithium concentrations (0.5-5mM) during two hours and glycogen content was measured. Results show that lithium stimulates glycogen synthesis after refeeding. Altogether our data shows that lithium exerts insulin-like effect in the brain. Further histochemical studies to measure glycogen content in different rat regions are being explored. Support by: CNPQ, FAPERJ, CAPES.