



## Oral administration of lithium increases tissue magnesium contents but not plasma magnesium level in rats

Małgorzata Kielczykowska, Irena Musik, Anna Hordyjewska,  
Anna Boguszewska, Anna Lewandowska, Kazimierz Pasternak

Medical Chemistry Department, Feliks Skubiszewski Medical University of Lublin,  
Staszica 4, PL 20-081 Lublin, Poland

**Correspondence:** Małgorzata Kielczykowska, e-mail: malgorzata.kielczykowska@am.lublin.pl

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### Abstract:

The aim of this work was to determine the influence of different doses of lithium on magnesium concentration in plasma and tissues of rats. For a period of eight weeks rats had been provided with aqueous solutions of  $\text{Li}_2\text{CO}_3$  whose concentrations were established as follows: 0.7; 1.4; 2.6; 3.6; 7.1; 10.7 mmol  $\text{Li}^+/\text{l}$ . Magnesium concentration was determined in plasma and tissue supernatants. Lithium caused no changes in magnesium concentration in plasma, whereas Mg concentration in tissues was found to be enhanced, although the degree of the increment depended on the studied tissue. In the liver, brain and heart muscle, the increase was statistically insignificant *vs.* control. In the kidney, the higher Li doses were required to result in the significant Mg enhancement, whereas in femoral muscle all the used doses caused well-marked Mg increase *vs.* control. Positive correlations between average daily Li intake and tissue Mg concentration in the kidney ( $r = 0.650$ ) and femoral muscle ( $r = 0.696$ ) were found. In conclusion, the present study indicates that the different Li doses disturbed tissue homeostasis of magnesium. The increase in Mg tissue concentration, observed in groups receiving higher Li doses can influence nervous-muscular excitability.

### Key words:

magnesium, lithium, male rats, plasma, tissues

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