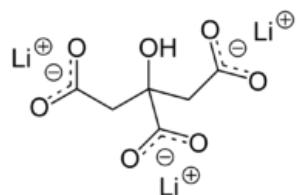


Lithium (pharmacology)

Lithium (Li_2CO_3) is a drug used to treat mania, bipolar disorder and tendencies to suicide

Mechanism of action

Lithium cations are capable of displacing potassium cations from the cells, and this results in depolarization, which induces relaxation. Lithium cannot be removed by the sodium-potassium pump, so it is well maintained in the cells. Lithium also affects the second messenger system, increasing its effects.



Lithium carbonate

Therapeutic treatment

The big risk in using lithium is in its small therapeutic index. The therapeutic dose is in the range of **0.8-1.2 mmol/l** and lethality appears already at **3-5 mmol/l**. The effect starts after 10 days, in combination with an antipsychotic earlier. Long-term administration is necessary for the usual duration of 6-12 months and maintenance of the level at values of 0.4-0.8 mmol/l.

Metabolism

Oral lithium is not protein bound, but its renal elimination half-life is long. This time can be prolonged by kidney disease, concurrent use of non-steroidal anti-inflammatory drugs or thiazide diuretics. These induce reabsorption of lithium, which can approach toxic values.^[1] Otherwise lithium causes polyuria.

Side effects

To understand the side effects, it is necessary to realize that lithium does not replace potassium only in the CNS, but throughout the body. This also results in its side effects.

- gastrointestinal problems;
- diabetes insipidus;
- changes on the ECG;
- eufunctional or hypofunctional goiter;
- polydipsia;
- polyuria;
- mainly in combination with SSRI - serotonin syndrome.

At toxic values **above 2 mmol/l** other problems occur in the CNS.

- disorders of cortical functions;
- motor coordination disorder;
- convulsions, coma or even death.^[2]

Undesirable interactions with NSAIDs, ACE inhibitors and diuretics (thiazide) occur when the plasma concentration of lithium increases.

Links

Related Articles

- Antipsychotics
- Antidepressants

References

- HYNIE, Sixtus. *Farmakologie v kostce*. 2. edition. Praha : Triton, 2001. 520 pp. ISBN 80-7254-181-1.
- LINCOVÁ, Dagmar, et al. *Základní a aplikovaná farmakologie*. 1. edition. GALÉN, 2002. 601 pp. ISBN 80-7262-168-8.

References

1. LINCOVÁ, Dagmar, et al. *Základní a aplikovaná farmakologie*. 1. edition. GALÉN, 2002. 601 pp. ISBN 80-7262-168-8.
2. LINCOVÁ, Dagmar, et al. *Základní a aplikovaná farmakologie*. 1. edition. GALÉN, 2002. 601 pp. ISBN 80-7262-168-8.