



## Reduce lithium from the diet?

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Lithium (Li) is one of the powerful long term treatments for bipolar disorder, protecting against both depression, mania and reducing the risk of suicide. Individual episodes of depression and mania can usually be successfully treated [1]. Prevention of relapse is important to reduce the disability caused by recurrent illness. Lithium was the standard treatment for relapse prevention for long time. Instead there are critical reports, substantial new data on the long term efficacy of lithium are investigated. Increase in randomized evidence over the last few years means that we know now far more about advantages and common adverse effects of lithium than we did at the beginning of use it in clinical psychiatry [2].

Li treatment is associated with variable electrocardiography changes what is related with heart drug administration. One of them methyldopa, being hypotensive often used drug may to escalate toxicity of lithium salts and patients receiving methyldopa may need lower dose of general anesthesia drug. Lithium has a narrow therapeutic index, especially in the elderly, for age-related pharmacodynamics and pharmacokinetic changes, higher rates of medical comorbidities and polypharmacy, increased brain vulnerability resulting from cerebrovascular disorders, parkinsonism and dementia. The potential chronic side effects of lithium, hypothyroidism or renal failure were not purposeful problem in elderly patients affected by mood disorders [3].

Findings Altinbas'a K suggest that the use of lithium even in therapeutic range is associated with both atrial and ventricular electrical instability [4]. However generally lithium overdose is not associated with cardiac disorders, but it can occur in individuals who have underlying heart disease. Lithium overdose is associated with variable electrocardiography changes in QT interval prolongation, ST segment and T wave changes. Lithium cardiac arrhythmias is connected with junction bradycardia, sinus node and atrioventricular dysfunction including sinus bradycardia, sinoatrial block, and first-degree atrioventricular block, ventricular asystole and myocardial infarction [5]. However in research Tsung-Ming Lee lithium protects rats against ventricular arrhythmias after myocardial infarction. What is interesting, peroxynitrite product of NO radical and superoxide is an important trigger of nerve growth factor (NGF). NGF is a prototypic member of the neurotrophin family which are critical for the differentiation, survival, and synaptic activity of the peripheral sympathetic and sensory nervous systems. Increased sympathetic nerve activity plays an important role in the generation of ventricular arrhythmia and sudden cardiac death. The master regulator of redox homeostasis is nuclear factor erythroid-2-related factor 2 (Nrf2). Nrf2 regulates the expression of over 100

genes involved in reactive oxygen species (ROS) transformation. One of this genes is heme oxygenase-1 (HO-1) which mRNA level is about two time higher after lithium treatment in left ventricle. This may decrease myocardial infarction which is effect of oxidative stress. So we can say that oxidative and antioxidative process may lead to antiarrhythmic effect of lithium [6].

Lithium salts has advantageous and not favourable properties but I can say that positive predominate.

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