

A conversation with Professor Nestor Kapusta, September 14, 2015

Participants

- Professor Nestor Kapusta – Associate Professor, Suicide Research Group, Department of Psychoanalysis and Psychotherapy, Medical University of Vienna
- Luke Muehlhauser – Research Analyst, Open Philanthropy Project

Note: These notes were compiled by the Open Philanthropy Project and give an overview of the major points made by Professor Nestor Kapusta.

Summary

The Open Philanthropy Project spoke with Professor Nestor Kapusta of the Medical University of Vienna as part of its investigation into the health effects of trace amounts of lithium in drinking water, especially its potential effect on suicide rates. Conversation topics included potential positive and negative effects of trace lithium, the feasibility of additional studies on the topic, and other people to talk to about this topic.

Effects of trace amounts of lithium

Trace amounts of lithium in drinking water may have a beneficial effect on some health outcomes. In particular, several correlational studies have shown an inverse relationship between the level of naturally occurring lithium in the water supply and rates of suicide. However, insufficient research has been conducted to demonstrate that adding lithium to the water supply would be both beneficial and safe.

Lithium is used as a treatment for some psychiatric disorders at a dose that is 500-1,000 times higher than the trace amounts naturally found in drinking water across the globe. At this standard dose, lithium can treat psychiatric disorders by stabilizing mood. However, long-term intake of lithium at high doses can cause health problems in some individuals. Although rather unlikely, there is no research examining the question whether very low doses of lithium would have similar effects.

Due to its neuroprotective effects, trace lithium may prevent or slow the progression of different neurodegenerative disorders such as Alzheimer's disease, but more research is needed in this area.

Additional studies on trace lithium and suicide

To date, only ecological studies have examined the relationship between trace lithium in the water supply and rates of suicide.

Population-level randomized controlled trials that involve adding lithium to the public water supply may be infeasible because:

- Adding lithium to the water supply may pose a danger to specific populations, such as persons with kidney diseases, thyroid problems or pregnant women and their developing fetuses. This question has not been studied extensively.

- For a population-level study, it could be difficult to get ethics committee approval and consent from all participants.

However, there may be a lower level of ethical concern about intervention studies in which lithium is filtered out of the water supply rather than added to it.

A regression discontinuity study could potentially be conducted on geographical areas with different water supplies.

Professor Kapusta thinks randomized controlled trials or regression discontinuity studies of this sort may be premature, and that it may make sense to first conduct additional basic investigations of the effects of lithium. Such studies could focus on a better understanding of microdose-lithium effects on the cellular level —brain-derived neurotrophic factor (BDNF), glycogen synthase kinase 3 (GSK-3), tumor necrosis factor (TNF alpha), vascular endothelial growth factor (VEGF), etc. — or start to examine microdose-lithium effects on subjects with neurodegenerative and psychiatric disorders in randomized controlled trials. Some first promising results are on the way.

Other researchers

The scientific community interested in microdose-lithium effects is growing continuously and several researchers have already contacted Professor Kapusta indicating their interest in conducting studies on microdose-lithium and suicide or other health outcomes in their own countries. Researchers from the renowned International Group for The Study of Lithium Treated Patients (IGSLI) are well informed about this potential field of research and support colleagues in this regard.

Other people to talk to

- Zoltán Rihmer
- Takeshi Terao

*All Open Philanthropy Project conversations are available at
<http://www.givewell.org/conversations>*