

27 -02-2013

Dear Dr. Marsman:

I am convinced that long-term consumption of de-mineralized or desalinated water, if it is the only or the main source of drinking water, can have serious adverse health effects. First of all, I see a major problem in the fact that many people dislike de-mineralized drinking water because of its poor taste, as Dr. F. Kozisek aptly points out in his article on „Health risks from drinking de-mineralized water“. People in general therefore consume much less water than required for maintaining an adequate fluid and electrolyte balance. Hence, dehydration, though not explicitly addressed in the Kozisek article, should be a major concern. Because the body's thirst sensation diminishes continuously from age 50 on, particularly elderly people may become dehydrated within a short period of time. It should be noted that ensuing confusion and dizziness increase the risk of falls and osteoporotic fractures, which in old people are associated with a mortality rate of 20%.

For me it is mandatory that public authorities guarantee the highest possible supply of minerals with processed drinking water, not only to make it more palatable but also because of the positive effect of calcium and magnesium on several health outcomes. Apart from the well known cardio-protective effect of magnesium, it is now well established that high calcium intake is significantly associated with lower incidence of osteoporosis, colorectal, breast and possibly prostate cancer, arterial hypertension and ensuing cardiovascular disease (for review, Peterlik et al., *Nutrients* **2013**, 5, 302-327).

Analysis of data from 46 recent studies from Europe, North America, South-East Asia and the South Pacific area clearly reveals that low habitual calcium intake is highly prevalent in the general population, affecting both genders: On the average, 30-80% of the adult population worldwide fail to meet recommended intake levels. The extent of calcium insufficiency is particularly high in older populations, and in some geographical areas, also in schoolchildren, adolescents and in young women of child-bearing age. A special problem arises from the fact that some population groups in certain tropical countries but notably also in the USA preferentially consume cereal-enriched diets, which are extremely low in calcium (for details, Peterlik et al., *Int. J. Environ. Res. Public Health* **2009**, 6, 2585-2607).

It is reasonable to assume that people in the lower brackets of daily calcium intake will benefit most from long-term consumption of calcium-enriched drinking water, as ingestion of any amount of additional calcium must be seen as a valuable means to improve the calcium status of an individual.

Dear Dr. Marsman, I hope this will satisfactorily answer your question on what I think about the health risks of long-term consumption of drinking water low in calcium. Otherwise, do not hesitate to contact me again. I will be happy to answer any other question you might have.

Kind regards,

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Professor emeritus of Pathophysiology

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