

HOW CAN YOU PROTECT YOURSELF AGAINST HEAVY METALS? INTERACTIONS BETWEEN ESSENTIAL MINERALS AND HEAVY METALS

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Abstract

Heavy metals like cadmium (Cd), lead (Pb) and mercury (Hg) interact with essential minerals like zinc (Zn), iron (Fe), copper (Cu) and calcium (Ca) in different stages of absorption, in distribution in the organism and in excretion.

Among the heavy metals, Cd is one of the most toxic and Cd accumulation in the key food crops like wheat leads to risk to the health of consumers. Cd in soils has increased due to the human use of fertilizers, the combustion of garbage and sludge. Simultaneously the concentrations of essential minerals in crops such as grains have decreased.

Interactions between Cd and Zn / Fe have been reported in numerous papers. Sufficient dietary Zn and Fe intake and Zn and Fe status in the body plays a significant role in preventing and reducing adverse actions and the toxicity of Cd.

Over 60% of the world's population is estimated as Fe-deficient and over 30% as Zn-deficient. More than two billion people, particularly in developing countries suffer from so called "Hidden hunger". Grain products from wheat, rice and maize are globally the most important sources of essential micronutrients. Wheat stands for 30% of all cereals produced for food purposes. Thus, wheat contributes more to intake of heavy metals than the other cereals.

Whole grain products are naturally rich in essential minerals and many varieties of ancient grains of wheat have even higher density than modern wheats. In refined wheat and polished rice micronutrients have been reduced by up to 75%. All seeds contain phytate, an anti-nutrient that binds and protects the minerals in the seeds until the minerals are needed for growing of the germ. Phytate affects the bioavailability of essential minerals however phytate even has capacity to bind heavy metals in the intestines.

It is a challenge for the agricultural as well as for the food industry to produce and develop staple foods for daily use that are proven to be healthy!