Assessment of Metals in Whey Protein Nutritional Supplements: Implications for Human Nutritional Requirements and Potential Risk

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Outline

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Abstract

Protein supplements (PS) are trendy foods, especially those made from whey. In addition to provide protein, these products are a source of metals, providing essential elements (Na, K, Mg, Ca, Mo, Mn, Fe, Co, Cu, and Zn) and other potentially toxic elements (Al, B, Sr, V, Ba, and Ni). Despite the nutritional benefits of these supplements, protein powders can become adulterated by external sources, including contamination of the food chain by agricultural and anthropogenic activities. For different brands of whey purchased on the market. In the study, different quantitative methods to detect elements. Inductively Coupled Plasma-Optical Emission Spectrometer (ICP–OES), and Inductively Coupled Plasma-Sector Field Mass Spectrometer, ICP–SFMS). A human health risk assessment was carried out to evaluate the potential carcinogenic and other risks to consumers of these products. Two articles mainly use estimated daily intake (EDI) and hazard quotient (HQ) or hazard index (HI) to assess non-carcinogenic risks. The second article uses cancer slope factor (CSF) to assess cancer risk (CR). While the concentrations of potentially toxic elements were found to be at acceptable levels. The results suggest that excessive and prolonged use of some of these products may place consumers at a slightly elevated risk for developing cancer or other negative health impacts throughout their lifetimes. Among them, Bethencourt-Barbuzano research results show that the non-carcinogenic risk of consuming whey protein is acceptable, while Ring results indicate that long-term consuming of whey protein, the non-carcinogenic risk HI of some samples exceeds one and the carcinogenic risk exceeds the threshold, so consuming whey protein will increase lead. The harm of metal to human body. It is recommended to improve the information to the consumers of these new products. Furthermore, to help in the management and prevention of these potential health risks, it would be advisable to improve the regulation of these dietary supplements and Product ingredient label.

References

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