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Human Zinc Nutrition in Central Iran

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Abstract

Zinc (Zn) deficiency can significantly affect human health. It is a risk that mainly occurs in populations dependent on cereals and having little or no access to animal products Bioavailable concentrations of Zn are usually low in cereal grains due to the presence of phytic acid (PA). In this study, we investigated the contribution of Zn from the dietary food supplies of two test populations in central Iran and compared it with associated international reference values.

A dietary survey was performed in 28 and 25 randomly selected households of a rural and a sub-urban community, respectively, using the method of three-day weighed food records. The consumption of meat and dairy products, providing highly bioavailable zinc, differed considerably between households, depending primarily on economic conditions. This was more evident in the suburban population, where variations in the economic conditions were larger than in the village. The Zn and PA contents of staple cereal-based foods such as bread and rice, and staple pulses, as well as the Zn content of commonly consumed dairy products and meat were determined. Although the Zn levels were moderately high in rice, bread and staple pulses, the PA to Zn molar ratios were above the levels expected to cause a major reduction in zinc absorption. While the average total Zn intake of both populations was estimated as 10 mg d^{-1}, the bioavailble Zn intakes were reduced to 5 mg d^{-1} and 7 mg d^{-1} for the rural and the sub-urban populations, respectively. The total Zn intake of males and females $\geq$ 15 years of age averaged 12.5 mg d^{-1} in the village and 11.5 mg d^{-1} in the sub-urban area. Comparing these results with the recommended daily allowances (RDA), both groups had average intakes below the recommended values. Compared to the estimated average requirements (EAR), which represents the dietary intake level at which 50 % of individuals would meet their physiologic requirement, the male's average Zn intake was lower than the respective reference value, while for the females it was slightly higher. Serum Zn concentrations are currently under analysis as complementary data to evaluate the Zn status of the considering populations.

Keywords: Bioavailable, food, Iran, Zn intake

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