

Assessment of Zinc Content in Nuts by Atomic Absorption Spectrometry Method

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Abstract : Nuts have high nutritional value. They are a good source of polyunsaturated fatty acids, dietary fiber, vitamins (B₁, B₆, E, K) and minerals: magnesium, selenium, zinc (Zn). Zn is an essential element for proper functioning and development of human organism. Due to antioxidant and anti-inflammatory properties, Zn has an influence on immunological and central nervous system. It also affects proper functioning of reproductive organs and has beneficial impact on the condition of skin, hair, and nails. The objective of this study was estimation of Zn content in edible nuts. The research material consisted of 10 types of nuts, 12 samples of each type: almonds, brazil nuts, cashews, hazelnuts, macadamia nuts, peanuts, pecans, pine nuts, pistachios, and walnuts. The samples of nuts were digested in concentrated nitric acid using microwave mineralizer (Berghof, Germany). The concentration of Zn was determined by flame atomic absorption spectrometry method with Zeeman background correction (Hitachi, Japan). The accuracy of the method was verified on certified reference material: Simulated Diet D. The statistical analysis was performed using Statistica v. 13.0 software. For comparison between the groups, t-Student test was used. The highest content of Zn was shown in pine nuts and cashews: 78.57 ± 21.9 , 70.02 ± 10.2 mg/kg, respectively, significantly higher than in other types of nuts. The lowest content of Zn was found in macadamia nuts: 16.25 ± 4.1 mg/kg. The consumption of a standard 42-gram portion of almonds, brazil nuts, cashews, peanuts, pecans, and pine nuts covers the daily requirement for Zn above 15% of recommended daily allowances (RDA) for women, while in the case of men consumption all of the above types of nuts, except peanuts. Selected types of nuts can be a good source of Zn in the diet.

Keywords : atomic absorption spectrometry, microelement, nuts, zinc

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