

ABUNDANCE OF SELENIUM AND SELENOPROTEINS IN FOODS CONSUMED IN PORTUGAL

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Selenium (Se) is an essential element for human health. Dietary levels in the population are positively correlated to selenium content in foods as consumed. Dietary Reference Intake for Se is 55 µg/day for adult men and women. However, depending on the species, oxidation state and concentration Se can be toxic to human health. Accurate determination of Se content in the diet demands information not only on total Se (tSe) but also on the bioaccessible species presented in food samples [1].

The aim of this work was to evaluate the concentration of tSe and Se species as Selenomethionine (SeMet), Selenite (SeIV) and Selenate (SeVI) in cow milk, cabbage and fish samples consumed in Portugal.

Accurate analysis of tSe was carried out by ICP-MS preceded by acid digestion in a closed-vessel microwave system. Several approaches for extraction of Se species from food matrices were studied followed by quantification with HPLC-ICP-MS. The reliable conditions of analytical procedures were achieved with metrological tools operated under the frame of ISO/EN 17025:2005.

tSe content ranged from 67 ± 3 µg.kg⁻¹ (cabbage), 161 ± 16 µg.kg⁻¹ (milk) and 988 ± 27 µg.kg⁻¹ (fish). SeMet was major selenium species in milk and fish samples accounting for 85 -90 % of tSe content. In cabbage Se (IV), Se (VI) and (SeMet) were found.

The results showed the suitability of analytical procedure to measure tSe and seemed effective to achieve an accurate determination of Se species in these complex matrices.

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References: [1] Bodnar, M., Szczyglowska, M., Konieczka, P., Namiesnik, J. Methods of Selenium Supplementation: Bioavailability and Determination of Selenium Compounds. *Critical Reviews in Food Science and Nutrition*. 2016. 56: 36-55.