

Contents of essential and toxic elements in selected species of nuts and seeds

Zawartość pierwiastków niezbędnych i toksycznych w wybranych gatunkach orzechów i nasion

**Karolina Łóżna, Marzena Styczyńska, Joanna Hyla,
Jadwiga Biernat, Monika Bronkowska**

*Department of Human Nutrition, Wrocław University of Environmental Life Sciences, Poland
e-mail: karolina.lozna@up.wroc.pl*

In the last decade, a growing interest has been observed globally in nuts and seeds as significant elements of an everyday diet. This has been suggested by the FDA which recommends a daily intake of 1.5 ounce (~ 40 g) of nuts and seeds as a part of a balance diet.

The aim of this study was to determine contents of selected macro- and microelements and toxic trace elements in nuts and seeds of oil plants depending on their species and place of origin.

Experimental material consisted of nuts (peanuts, hazel nuts, walnuts, pistachios, cashew nuts, Brazilian nuts, pine nuts and macadamia nuts) and seeds of oil plants: sunflower, pumpkin, sesame, poppy and flax. Nuts and seeds originated from three distributors, one of which had a bio-farm certificate. Contents of sodium, potassium and calcium were determined with the atomic emission spectrometry method (FEAS), whereas these of magnesium, iron and zinc – with the method of atomic absorption spectrometry (FAAS), after dry-mineralization of the samples at 450°C, for 12 h. Contents of toxic elements: lead, cadmium and arsenic, were assayed with the method of graphite furnace atomic absorption spectrometry (GF-AAS). Analyses were conducted using a Varian AA240Z – GTA atomic absorption spectrometer. Analytical results were compared with PTWI values (Periodical Tolerable Weekly Intake) considering the intake of an average daily portion of 40 g.

The analyzed nuts and seeds were rich in magnesium, zinc and iron. The highest content of magnesium was determined in Brazilian nuts, that of zinc in pumpkin seeds and that of iron in cashew nuts. Raw nuts and seeds were characterized by a low content of sodium and a high content of potassium, what is especially beneficial to human health. Nuts and seeds originating from Ethiopia and Hungary were characterized by the lowest contents of lead and cadmium and the highest content of arsenic, compared to the products from other countries.