ELEMENTAL COMPOSITION OF FIFTEEN MEDICINAL SPECIES OF ASTERACEAE FAMILY OF MOLDOVAN ORIGIN DETERMINED BY NEUTRON ACTIVATION ANALYSIS

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The content of major- and microelements (Na, Mg, Al, Cl, K, Ca, Sc, V, Cr, Mn, Fe, Co, Ni, Zn, As, Se, Br, Rb, Sr, Mo, Sb, Cs, Ba, La, Ce, Sm, Tb, Hf, Ta, Th and U) in 15 medicinal species of the Asteraceae family collected from the experimental field of the National Botanical Garden of the Republic of Moldova was determined by neutron activation analysis at the IBR-2 reactor. Potassium was found to be the most abundant major element; its content in plants ranged from 20,700 mg/kg in *Artemisia lerchiana* to 58,000 mg/kg in *Matricaria recutita*. The content of other major elements existed in the following ranges: Ca from 4700 to 14,200 mg/kg and Mg from 1710 to 3870 mg/kg. The maximum content of Mg, K and Ca in analyzed plants was higher compared to data presented in the literature. Among essential microelements the most abundant were Fe (83–910 mg/kg), Mn (23–150 mg/kg) and Zn (27–76 mg/kg). The health risk index (HRI) and the daily intake of metal (DIM) were calculated for As, Ni, Sb, V, Mn, Cr, Co, U, Sr, Al, Fe and Zn. DIM values above the oral reference dose (RfD) for Co (0.0003 mg/kg/day) were identified in *Calendula officinalis* (3.12×10^{-4} mg/kg) and *Tanacetum balsamita* (7.47×10^{-4} mg/kg), and above RfD for V (0.00007 mg/kg/day) in *Achillea clypeolata* (4.84×10^{-4} mg/kg), *Artemisia balchanorum* (4.04×10^{-4} mg/kg), *Artemisia lerchiana* (1.11×10^{-3} mg/kg), *Tanacetum balsamita* (3.31×10^{-4} mg/kg), *Helichrysum arenarium* (4.53×10^{-4} mg/kg) and *Matricaria recutita* (3.61×10^{-4} mg/kg). HRI values exceeding threshold were identify in *Calendula officinalis* (1.04 mg/kg) and *Tanacetum balsamita* (2.4 mg/kg) for Co and in all herbal samples for V. The high concentrations of these elements can have a negative impact on the cardiovascular, respiratory and endocrine systems. In herbal plants samples (*Achillea filipendulina*, *Achillea millefolium*, *Artemisia absinthium*, *Centaurea cyanus*, *Tanacetum parthenium*, *Cichorium intybus*, *Echinops ritro* and *Helichrysum italicum*) HRI values for all elements were below the threshold which means insignificant carcinogenic health risk when using infusions from studied plants.