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ANALYSIS OF COMMERCIALY AVAILABLE BOTTLED WATER IN POLAND

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Abstract

Bottled water (commonly called mineral) makes an important source of minerals for humans. Its consumption has been systematically rising in the highly industrialized countries, even though not every water type has appropriate health properties. As a result, drinking bottled water ought to be supported with understanding its qualities and physicochemical content.

The following article presents the results of the research into pH levels, electrical conductivity, selected inorganic anions (F^- , Cl^- , NO_3^- , PO_4^{3-} , SO_4^{2-}), cations (Na^+ , NH_4^+ , K^+ , Mg^{2+} , Ca^{2+}), metals and metalloids (Co, Ni, Cu, Zn, Cd, Pb, As, Cr, Mn, Ba, Rb, Sr, Ag, Tl, V, U, Bi, Mo, Sb) of determined for the 48 bottled waters commercially available in Polish supermarkets. The methodology optimization applied for the selected inorganic anions and cations as well as metals and metalloids helped to determine them on the ultra-trace levels ($<\mu g L^{-1}$). Inorganic ions were analyzed with the ion chromatography method. On the other hand, the ICP-MS method was applied to analyze metals and metalloids. The validation parameters (limits of detection and quantification, recovery, regression coefficients and coefficient of variation) were sufficient for the ultra-trace analysis. Due to the comparison of the obtained results with the data provided by producers, numerous significant differences were observed.

Key words: bottled water, ion chromatography, inorganic ions, metals, trace elements

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