

## **RISK AND BENEFIT ASSESSMENT OF TRACE AND MAJOR ELEMENTS DETECTED IN HONEY OF DIFFERENT ORIGINS**

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Honey is a natural product consumed as food and used as an active component in medicine and cosmetology. From the perspective of environmental science determination of trace and major elements in honey can be valuable tool for following issues: (a) benefit assessment of detected major element and micronutrient involvement in food chain, (b) risk assessment of detected potentially toxic trace element contamination or involvement in food chain, (c) assessment of sitespecific environmental impacts and other influences on the product formation. These problems are in a scope of interest because honey is a foodstuff mostly consumed without any processing and the chemical composition of honey is not constant and equal due to its geographical of botanical origin, and also can be dependent on the site and time specificclimatecharacteristic. Current study was performed by analyzing more than 70 honey samples that were collected from markets and groceries all over Latvia. Honey samples were analyzed by using flame atomic absorption spectrometry methods and inductively coupled plasma mass spectrometry. For sample pre-treatment various techniques were tested for example dry ashing, wet digestion by concentrated nitric acid or simple sample dissolution in warm water. Overall it was possible to determine 5 major elements (Ca, Fe, K, Mg, Na) and a range of trace elements (Cd, Co, Cr, Cu, Mn, Ni, Pb, Zn). The results reveal that the main major elements detected in honey are potassium and calcium. Content of major elements substantially depend upon botanical origin of honey. Trace element analysis is particularly useful for the identification of potentially toxic elements and can reflect impact of site-specific anthropogenic pollution. Risk and benefit assessment of trace and major elements in honey of different origins was performed in larger scale than concerning Latvia only. Available studies of honey analysis all over European countries were summarized. It was discovered that trace and major element content varies in a wide range in honey samples with different geographical origin. Within the scope of awareness heavy metals (Pb, Cd, Cr) are important due to their potential risk for human health but such elements as Mn, Cu, Zn, Fe, K can be brought forward as beneficial elements.

Keywords: honey, trace and major elements, environmental contamination