

## Risk Assessment of Lead Element in Red Peppers Collected from Marketplaces in Antalya, Southern Turkey

**Authors :** Serpil Kilic, Ihsan Burak Cam, Murat Kilic, Timur Tongur

**Abstract :** Interest in the lead (Pb) has considerably increased due to knowledge about the potential toxic effects of this element, recently. Exposure to heavy metals above the acceptable limit affects human health. Indeed, Pb is accumulated through food chains up to toxic concentrations; therefore, it can pose an adverse potential threat to human health. A sensitive and reliable method for determination of Pb element in red pepper were improved in the present study. Samples (33 red pepper products having different brands) were purchased from different markets in Turkey. The selected method validation criteria (linearity, Limit of Detection, Limit of Quantification, recovery, and trueness) demonstrated. Recovery values close to 100% showed adequate precision and accuracy for analysis. According to the results of red pepper analysis, all of the tested lead element in the samples was determined at various concentrations. A Perkin- Elmer ELAN DRC-e model ICP-MS system was used for detection of Pb. Organic red pepper was used to obtain a matrix for all method validation studies. The certified reference material, Fapas chili powder, was digested and analyzed, together with the different sample batches. Three replicates from each sample were digested and analyzed. The results of the exposure levels of the elements were discussed considering the scientific opinions of the European Food Safety Authority (EFSA), which is the European Union's (EU) risk assessment source associated with food safety. The Target Hazard Quotient (THQ) was described by the United States Environmental Protection Agency (USEPA) for the calculation of potential health risks associated with long-term exposure to chemical pollutants. THQ value contains intake of elements, exposure frequency and duration, body weight and the oral reference dose (RfD). If the THQ value is lower than one, it means that the exposed population is assumed to be safe and  $1 < \text{THQ} < 5$  means that the exposed population is in a level of concern interval. In this study, the THQ of Pb was obtained as  $< 1$ . The results of THQ calculations showed that the values were below one for all the tested, meaning the samples did not pose a health risk to the local population. This work was supported by The Scientific Research Projects Coordination Unit of Akdeniz University. Project Number: FBA-2017-2494.

**Keywords :** lead analyses, red pepper, risk assessment, daily exposure

**Conference Title :** ICACA 2018 : International Conference on Agricultural Chemistry and Agrochemicals

**Conference Location :** Copenhagen, Denmark

**Conference Dates :** June 11-12, 2018