THE CONTENT OF MACRO AND TRACE ELEMENTS IN CURD AND TRADITIONAL WHITE BRINED CHEESE

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Abstract. The content of macro and trace elements in curd samples and white brined cheese produced from raw ewes' milk using a traditional technology in different regions in Macedonia is the subject of this study. The cheese is manufactured in households located in regions exposed to different levels of anthropogenic pressure. The content of 19 elements (Ag, Al, As, Ba, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, P, Pb, Sr, and Zn) is analyzed by inductively coupled plasma-atomic emission spectrometry (ICP-AES) after performed microwave digestion. The highest values of Ca, Mg, K and P are observed in curd samples collected from a household near the city of Skopje with concentration of 2139-3343 mg/kg, 103-196 mg/kg, 313-545 mg/kg and 942-1499 mg/kg, respectively. The cheese samples contain 732-4549 mg/kg (Ca), 35.8-176 mg/kg (Mg), 63-344 mg/kg (K), 496-2138 mg/kg (P) and 3231-12828 mg/kg (Na). The non-standardized procedures for cheese production and the low quality equipment for cheese production has affected the content of macro and trace elements in the end product. The content of Ag, As, Cd, Co, Ni and Pb in all of the analyzed samples was below the detection limit although some households are exposed to environmental contamination with heavy metals (Cd, Pb and Zn). In cheese, the content of Cu (2.49 to 8.08 mg/kg) shows higher content in all collected samples. The content of Fe is in the range of 3.81-12.09 mg/kg, Mn 0.12-0.70 mg/kg, Zn 4.21-18.33 mg/kg and Cr 0.04-0.14 mg/kg. The results of this study show that the traditional white brined cheese is safe for consumption.

Key words: Mineral elements, trace elements, curd samples, traditional cheese.