

STABLE ISOTOPE GEOCHEMICAL STUDY OF WATER AND FRESHWATER TUFA OF CSURGÓ SPRING (BAKONY MTS., HUNGARY)

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Abstract: The stable carbon and oxygen isotope composition of freshwater carbonates (tufa) can be used to study past climate changes. Despite this, geochemical researches were only done on freshwater carbonate precipitations in the Mecsek Mountains, the tufas of the Transdanubian and the North Hungarian Mountains remained unexamined. Our research area, the source of Csurgó Spring is located on the covered karst territory of the Northern Bakony Mountains. At the studied area, physicochemical parameters were measured and from May 2012 to May 2014, monthly water samples were collected for stable isotope analysis. Based on the chemical analysis of water can conclude that the carbonate precipitation is the most intensive during the warm-wet summer period. With the help of stable isotope analysis and X-ray diffraction method we demonstrate that the cement of calcareous conglomerate located at the Csurgó Spring is different from the composition of the tufa. Furthermore we compared the measured stable isotope values with the stable isotope data of tufas from other Hungarian mountains and from the neighbouring countries (ANDREWS, 2006). We observed that the stable isotope data of the tufa samples reflect the continental effect. The isotope composition ($\delta^{18}\text{O}$, δD) of Csurgó Spring shows no change during the investigated period, due to probably the increased residence time of water.

Keywords: stable carbon and oxygen isotope composition, tufa, chemical analyses, spring water, covered karst, Bakony mountains, Hungary