

ARCHAOMETRICAL RESULTS OF A K-METASOMATISED VOLCANITE POLISHED STONE TOOL FROM SZERENCSTAKTAFÖLDVÁR, HUNGARY

KERESKÉNYI, E.¹, SZAKMÁNY, Gy.², KRISTÁLY, F.³, KASZTOVSZKY, Zs.⁴ & FEHÉR, B.¹

¹Herman Ottó Museum, Miskolc, Hungary

²Department of Petrology and Geochemistry, Eötvös Loránd University, Budapest, Hungary

³Institute of Mineralogy and Geology, University of Miskolc, Miskolc, Hungary

⁴Centre for Energy Research, Budapest, Hungary

E-mail: kereskenyerika@yahoo.com

Archaeological background and macroscopic description

An archaeometric study was carried out on a late Neolithic Tisza culture related, 74.44.5 inventory numbered polished stone tool originated from Szerencs-Taktaföldvár archaeological site. The colour of the flat polished stone implement is black with red patches on its surface, which can be seen by naked eye. The weight of the tool is strikingly heavy. The magnetic susceptibility of the implement is extremely high 76.57×10^{-3} SI.

Results

The bulk chemistry was performed by non-destructive PGAA. The alkali content of the polished stone tool is exceedingly high (10.19 wt.%), the Al₂O₃-content is also high (21.70 wt.%), while the CaO content is very low (0.56 wt.%) and the SiO₂ content is 50.70 wt.%. Based on the high alkali content it can be possible that the rock was affected by alkali metasomatism.

Studying the BSE image of the stone implement, the duality of the texture is striking. One half of the polished section is inequigranular and porphyritic with potassium feldspar megacrysts, while the other half of the section is fine-grained. The size of the potassium feldspars is over 1 mm. Its composition varies: the Ba content increases from core to rim (0.03 to 0.10 apfu), but this trend does not appear in each crystal, so the rock contains Ba-rich and Ba-free potassium feldspars, either. The other observed minerals in the implement are oligoclase, relict enstatite, REE-rich epidote, biotite, clinocllore in large amount, dravitic tourmaline, magnetite and ulvöspinel in even distribution.

XRD analyses confirmed the presence of sanidine, feldspar, enstatite, ulvöspinel and magnetite.

In the Carpathian Basin and its surroundings, similar rocks with SiO₂ content cc. 50 wt.%, affected by alkali metasomatism, are known as potassic-trachyte from Mátra Mountains, Telkibánya, both in Hungary and Baia Mare, Romania (KUBOVICS, 1966). However, they

can be excluded as source areas, because of the much higher iron content of the stone tool. In the Veporicum and the Gemericum (Slovakia) alkali metasomatism took place, but more acidic rocks, mainly granite were affected by the process (ŠIMURKOVÁ *et al.*, 2016). Hyalophane-bearing, magnetite-rich rocks were described from the Slovak Ore Mountains, near Tisovec (HURAI & HURAIÓVÁ, 2011), furthermore dravite-bearing rock is mentioned from this area, too (BAČÍK *et al.*, 2015). Knowing the fact that the polished stone implement belongs to the Tisza culture, it is imaginable that the raw material came from southern areas (e.g., Balkan region or Romania) to the Szerencs-Taktaföldvár archaeological site. It is since the Tisza culture spread over a wide area, covering the Danube-Tisza interfluvium and Tiszántúl areas, either (KREITER *et al.*, 2017). Furthermore, the Tisza culture also appeared in the Banat region (Romania), and showing many analogies with the Vinča culture, which spread in North Serbia (RACKY, 1992).

Despite of the numerous unique signatures, the exact provenance field cannot be determined, and remote source areas cannot be excluded either.

References

- BAČÍK, P., ERTL, A., ŠTEVKO, M., GIESTER, G. & SEČKÁR, P. (2015): *The Canadian Mineralogist*, 53: 221–234.
- HURAI, V., & HURAIÓVÁ, M. (2011): *Neues Jahrbuch für Mineralogie – Abhandlungen*, 188: 119–134.
- KREITER, A., KALICZ, N., KOVÁCS, K., SIKLÓSI, ZS., VIKTORIK, O. (2017): *Journal of Archaeological Science: Reports*, 16: 589–603.
- KUBOVICS, I. (1966): *Földtani Közlöny*, 96: 13–26.
- RACKY, P. (1992): *Balcanica*, 23: 147–165.
- ŠIMURKOVÁ, M., IVAN, P. & GARGULÁK, M. (2016): *Acta Geologica Slovaca*, 8/1: 87–98.