# FISSURE-FILLING CLAY IN DACITE AT TOKAJ, HUNGARY – A HISTORICAL MEDICINE

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The historical medicine "Tokaj Earth"

A natural clay variety was mined for healing purposes on the Nagy Hill at Tokaj in the 16th to 18th centuries. Similar materials were widely applied since the ancient times, their name was *bolus* or *terra sigillata* (sealed earth), a variety from localities in Silesia was called *terra Silesiaca.* The Tokaj material was called *"terra medicinalis Tokayensis"*, i.e., Tokaj earth. The historical aspects were discussed in detail by VICZIÁN (2017). Mineralogy was described by VICZIÁN & NÉMETH (2021a, b).

Mineralogy

For the present study two historical samples preserved in mineralogical collections were taken. The first one was collected by József Szabó in 1863 from the Patkó Quarry, on northern end of the town Tokaj, on the NE side of Nagy Hill. The sample is now preserved in the Museum of Sárospatak Reformed College. The other one comes from the Mineral Collection of Debrecen University and was collected by Péter Rózsa in 1980. The locality is Tarcal Quarry, on the W flanks of Nagy Hill. The samples are of light brown colour with some reddish shade, homogeneous, relatively hard with conchoidal fracture. They are porous, strongly adhering to the tongue.

XRD and thermal analyses of the samples were carried out in Department of Mineralogy, Eötvös Loránd University, by Tibor Németh. XRD and thermal analyses show that main minerals are disordered kaolinite (about 65–70 %) and goethite (about 15 %). Kaolinite minerals were characterised by X-ray parameters like $H_i$: Hinckley Index, and Δ001: width of 001 basal reflection in °2θ units and by thermal parameters like $T_{corr}$: corrected dehydroxilation temperature, $T_d$: difference of $T_{corr}$ from standard, $T_{ex}$: temperature of exothermic reaction in °C.

**Genesis**

Measured parameters were compared with parameters characterising various genetic groups of kaolinites. One example is shown in Fig. 1.

Disordered kaolinites normally occur in nondiagenetic palaeosols and red clays. Kaolinite of Tarcal sample is extremely disordered, while that of the Tokaj, Patkós Quarry sample is transitional toward the ordered, hydrothermal type but is still in the range of the weathered kaolinites. Even low-temperature hydrothermal kaolinites are much more ordered, therefore *in situ* hydrothermal kaolinites near Mád (e.g., Király Hill, Bomboly, etc.) and lacustrine hydrothermal kaolin deposits at Rátka cannot be directly related to the clay occurrences on Nagy Hill, Tokaj. More similar is the genesis of the Szegi and Mezőzombor fire-clay deposits formed by subaerial weathering in the Upper Sarmatian humid and warm climatic period. However, the time of explosion of Nagy Hill volcano at Tokaj is much later, beginning of Lower Pannonian age. Because of its geologic setting, the *bolus* material cannot be derived of later, possibly Middle Pliocene terrestrial kaolinitic weathering crust that may have developed on the surface of the volcano. The most probable genesis is alteration of the underlying rhyolite tuff and of blocks of dacite by the action of very low-temperature, oxidising and acidic hydrothermal waters, and deposition in the fissures.

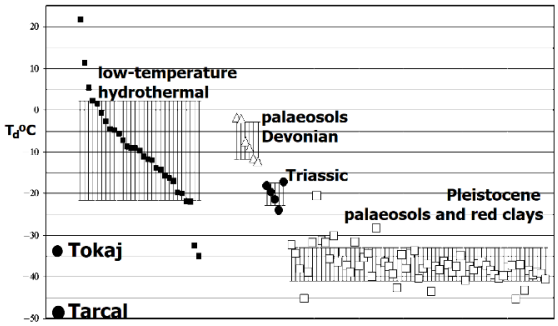


Fig. 1. Measured $T_d$ values in Tokaj, Patkó Quarry and in Tarcal Quarry compared with $T_d$ values of kaolinites formed in various genetic conditions. Figure from FÖLDVÁRI (2008), modified.

References

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