



Reinvestigation of the diatom flora in the Neogene lake system of Central Slovakia – preliminary data

Ревизия на диатомейната флора от неогенската езерна система на Централна Словакия – предварителни данни

*Nadja Ognjanova-Rumenova*¹, *Radovan Pipik*²
*Надя Огнянова-Руменова*¹, *Радован Пипик*²

¹ Geological Institute, Bulgarian Academy of Sciences, Acad. G. Bonchev str., bl. 24, 1113 Sofia, Bulgaria; E-mail: nognjan@geology.bas.bg

² Geological Institute, Slovak Academy of Sciences, Dumbierska 1, 97 401 Banská Bystrica, Slovakia; E-mail: pipik@savbb.sk

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Introduction

The Central and South-eastern European Neogene freshwater systems, which are part of the Neogene area called Paratethys, are often characterised by outstanding endemism. Despite the many systematic and ecologic papers dealing with local floras and faunas, the relations among these lake systems in space and time are still unexplored (Harzhauser, Mandic, 2008).

The evolution of the Neogene basins in the Western Carpathians was closely connected with the evolution of the Carpathian orogenic belt. During the Neogene, a volcanic activity by number of volcanoes formed the area of Central Slovakia. This activity coincided with a tectonic disintegration of the area on partial blocks with different vertical displacement. The Upper Sarmatian is represented by cyclic sediments that were deposited in a marshy environment under moderate to cool climatic conditions that kept growing cooler. The sediments are composed of kaolinic tuffs, claystones, sandstones, marly polymict breccias and diatomite beds, or lignite seams (Bezák et al., 1997).

After the first early works of Ehrenberg (1854), Grunow (1882) and Pantocsek (1892, 1905, 1913), the most detailed study of Carpathian Neogene diatoms was published by Řeháková (1980). More of these materials need new taxonomical documentation and reconsideration by scanning electron microscopy of the original material and more precise description of the taxa. This report provides a preliminary description of the diatom bearing deposits within Central Slovakia, their origin and precise age, as well as preliminary taxonomical remarks on the diatom flora.

Material and methods

Thirty-eight samples of lacustrine deposits were collected during a field trip in Central Slovakia in 2012. Twenty-one of them were barren of diatoms. The diatom-bearing deposits are located nearby the villages of Dúbravica, Močiar, Abramova, and Lutilla, as well as in Turova (Kremnica Mts). In addition, materials from the Ehrenberg Collection in Natural History Museum Berlin (raw materials # 2847-1 and # 2847-2, Jastrabá Kieselgur) and Pantocsek Collection in Natural History Museum Budapest (raw materials from lacustrine sediments nearby the villages of Dúbravica and Lutilla) were investigated.

The samples were cleaned by the modified method of Ognjanova-Rumenova (1991). Some specimens were examined with scanning electron microscope (SEM) Philips 515 at BGBM Freie Universität Berlin, Hitachi S-2600 N – Natural History Museum Budapest and Jeol JSM T5510 – Sofia University.

Results and discussion

The development of the different planktonic genera that belong to class Coscinodiscophyceae is very important in the diatom biostratigraphic subdivision, due to their well known evolutionary history (Ognjanova-Rumenova, 2000).

The Middle–Upper Miocene sediments are represented by diverse diatom assemblages, developed in the investigated profiles. Fossil diatom flora in the Abramova profile, Turiec Basin, is unique: the most abundant forms belong to the genus *Alveolophora*, *Fragilaria* species are subdominant.

In the studied profile near the village of Močiar, the dominant complex of the investigated diatom

flora is monotaxonic, generally consisting of the extinct species *Aulacoseira scala* (Ehr.) comb. nov. This species was also found in the Lutilla profile, but the subdominants are periphytic diatoms of the genera *Fragilaria*, *Eunotia*, *Anomoeoneis*, *Cymbella*, *Amphora*, *Gomphonema*, and *Surirella*. Similar subdominants were determined in the Dúbravica profile. The dominants are centric forms of the genera *Aulacoseira*, *Melosira*, and *Ellerbeckia*.

Planktonic centric species again of the genus *Aulacoseira* dominate the studied profile nearby Turova Village (Kremnica Mts.), but the species of the genus *Aulacoseira* in this assemblage are represented by extant forms: *Aulacoseira granulata* (Ehr.) Sim. and *A. ambigua* (O. Müll.) Sim.

The above discussed diatom assemblages show strong difference from the Neogene diatom assemblages of the Balkan Peninsula (Ognjanova-Rumenova, 2000, 2006).

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