

Abstract

The (Lomnice) LOM-1 borehole records a nutrient-rich quiet environment of the outer shelf to upper bathyal in the Mid Badenian (sensu Hohenegger *et al.* (2014)) of the Carpathian Foredeep. The LOM-1 borehole is rich of a fossil content with a relatively good preservation. The studied section can be correlated with the interval from 14.6 Ma (the FO of *Orbulina* spp.) to 13.42 Ma (the LO of *Sphenolithus heteromorphus*) which agrees with the beginning of the “Middle Miocene Climate Transition”.

The foraminifera for the carbon and oxygen stable isotope analysis were picked from the fraction 0.063-2 mm. The suitability for the stable isotope analysis was carefully evaluated based on the inner wall preservation. The isotopic analysis was done for fifteen samples with total 373 tests analyzed. Each analysis was performed from exactly one test. The following foraminiferal genera from different paleobiotops were used for the isotope analysis: *Globigerina bulloides*; *Orbulina universa*, *Praeorbulina glomerosa*; *Globigerinoides* spp.; *Uvigerina* spp.; *Heterolepa dutemplei*; *Cibicidoides* spp.; *Gyroidinoides* spp. and *Melonis pompilioides* to document the isotopic signal for the superficial and bottom waters. The oxygen and carbon isotope analysis from foraminiferal tests were used for the verification of the paleoecologic interpretations by Holcová *et al.* (submitted). The Benthic foraminiferal oxygen index was applied on the studied section.

The isotopic analysis results together with the benthic foraminiferal oxygen index were used for a detailed interpretation of the paleoenvironment in each sample. The interpretation documents the large variability and rapid changing of the paleoecological parameters, throughout the LOM-1 borehole. The observed relationship between the isotopic signal of *Melonis pompilioides* and *Gyroidinoides* spp. enabled the discussion about the ecologic preference of these particular species. Compared with the other isotopic studies in the Badenian of the Central Paratethys, the isotopic values show no global trends as reported by Báldi (2006) and Peryt (2013). Based on the isotopic signal of *G. bulloides* and *Orbulina universa*, the span of paleotemperatures was calculated. This span shows a good agreement with the paleotemperatures reported by Grunert *et al.* (2010) and Peryt (2013).

Keywords: carbon and oxygen stable isotopes; Central Paratethys; foraminifera; Mid Badenian; paleoecology; Carpathian Foredeep