

Extraction of Strontium isotopes from Otoliths of the mid-Burdigalian (lower Ottnangian) in the Central Paratethys

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The Southern German Molasse Basin is a part of the Paratethys, which developed as a marginal sea during the Alpine orogeny in the early Oligocene. The Molasse basin is characterized by marine, brackish and fluvial beds of Oligocene to Miocene age. In this study we focus on the Neuhofen beds, which represent an important lithostratigraphic unit of the Upper Marine Molasse. The NH beds are considered as lower Ottnangian in age based on biostratigraphy and lithostratigraphic correlations^[1]. Their exact age, however, has not yet been determined.

For this purpose we analyzed Sr isotopes of well-preserved fish-otoliths from the NH beds. Sr is homogeneously distributed in the oceans due to its long residence time. But the Sr isotopic composition changes over time, as consequence of the buildup of orogenies or enhanced volcanic activity. Hence, the incorporated Sr isotopic composition in biogenic materials like fish teeth^[2], ostracods^[3] and otolith^[4], can be used as indirect dating of marine sediments.

We conducted leaching experiments on 20 otoliths to extract the ambient ⁸⁷Sr/⁸⁶Sr seawater signal. We analyzed different fractions of otoliths from two fossil fish taxa (*Diaphus*, *Coelorinchus*). The otoliths were leached to remove the mobile Sr phase and to extract the ambient Sr seawater signal. The comparison with the Sr seawater evolution curve of the global ocean^[5] suggests an age of 17.1 ± 0.3 Ma, which is younger than previously thought. Further studies are planned to examine whether the new age data is representative for the NH beds.

[1] Pippèrr (2011), *Mar. Micropal.* **79**, 80-99. [2] Vennemann and Hegner (1998), *Paleogeo., Paleoclim., Paleoeco.*, **142**, 107-121. [3] Janz and Vennemann (2005), *Paleogeo., Paleoclim., Paleoeco.*, **225**, 216-247. [4] Pippèrr, Reichenbacher, Witt and Rocholl (2007), *N.Jb. Geol. Paläont. Abh.*, **245**, 353-378. [5] McArthur, Howarth and Shields (2012), In: *The Geologic Time Scale*, 127-144.