

Stable isotope analysis on ostracods as a proxy for palaeoenvironmental reconstruction in long-lived lakes

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Analysis of stable isotopes has become a standard procedure in palaeoclimatological and palaeoenvironmental studies. The purpose of an Austrian–Brazilian cooperative project is to utilize stable isotope analyses on ostracod valves in order to characterize the palaeoenvironmental evolution of two Miocene long-lived lakes: Lake Pannon (Central Europe) and Lake Pebas (Western Amazonia). Such analyses will be applied on specimens belonging to several ostracod genera. Due to the focus of the project on the evolutionary patterns of the genus *Cyprideis*, our emphasis is laid on endemic species of this genus, which are already used for Lake Pannon's and Lake Pebas' biostratigraphy (Jiříček & Riha, 1991; Muñoz-Torres et al., 2006). The goal is to render even subtle palaeoenvironmental changes, which could influence the morphology of this ostracod taxon.

Thanks to undoubted advantages, since the early eighties of the last century stable isotope analyses were applied on ostracods with increasing frequency and success. This is a consequence of some peculiar characteristics that render ostracods particularly useful: 1. They take up calcium carbonate and trace elements directly from the ambient water; 2. They moult several times before to reach the adult stage and each moult takes place in less than 24 hours. Consequently a valve represents a very short period of time and discrete palaeoenvironmental conditions (Turpen & Angell, 1971); 3. Their low-Mg calcite carapaces are commonly well-preserved; 4. Ostracods live in a very wide range of salinity (hyperhaline to freshwaters); 5. They can be easily separated from the sediment.

However, the first step of sample treatment is a critical point. In spite of a great amount of published work there are no standardized cleaning methods. Based on an in-depth bibliographical review as well as on own test series, we developed a “standard” procedure for isotopic analysis of fossil ostracods.

First results are presented for the Austrian sections at Mataschen (Styrian Basin; Early Pannonian) and Hennersdorf (Vienna Basin; Middle Pannonian) and for Brazilian outcrops in the Eirunepé region (Western Amazonia; Late Serravallian-Early Tortonian).

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Jiříček R. & Riha J. (1991) – *Correlation of Ostracod Zones in the Paratethys and Tethys*. Saito Hoon Kai Special Publications (Proceedings of Shallow Tethys), Vol. 3, pp. 435-457.

Muñoz-Torres, F., Whatley R.C., Van Harten D. (2006) – *Miocene ostracod (Crustacea) biostratigraphy of the upper Amazon Basin and evolution of the genus Cyprideis*. J. South Amer. Earth Sci., Vol. 21, pp. 75-86.

Turpen J.B. & Angell R.W. (1971) – *Aspects of molting and calcification in the ostracods Heterocypris*. Biological Bulletin, Vol. 140, pp. 331-338.