

Rare earth elements and yttrium in shells of *Helix pomatia* ("Roman snail")

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The rare earths and yttrium (REY) have become indispensable for many high-tech products and processes and are therefore increasingly released into the environment. Accordingly, the REY are considered as emerging microcontaminants and research on their biogeochemistry is highly relevant. However, despite a recently growing number of studies in this field, our knowledge on geogenic and anthropogenic REY behaviour in biological and biogenic samples is still surprisingly limited.

While REY incorporation into marine and freshwater mollusc shells has been comparably well-studied [e.g. 1, 2, 3], much less data are available for terrestrial mollusc shells. The edible land snail *Helix pomatia* (also known as "Roman snail") is widely distributed in Europe and secretes its aragonitic shell from the mantle epithelium, i.e. all REY present in its shell must have been bioavailable to the snail prior to their incorporation.

We present data for the complete REY series for *Helix pomatia* shells from different locations with different lithologies (soil parent material) in Austria, France, Germany and Switzerland. The shale-normalised REY (REY_{SN}) patterns of all shells show heavy REY depletion relative to light and middle REY. Other common features in most of the samples include a small positive La_{SN} anomaly, a pronounced negative Ce_{SN} anomaly and a slight decoupling of the geochemical twins Y and Ho. In our contribution, we will discuss the features of the shells' REY_{SN} patterns and compare their patterns to those of *Cepaea* shells, substrate rocks and plant samples that were also collected at some of the sites.

[1] Barrat, Bayon, Carney & Chauvaud (2022), *Chemical Geology* 610, 121102 [2] Merschel & Bau (2015), *Science of The Total Environment* 533, 91-101 [3] Ponnurangam, Bau, Brenner & Koschinsky (2016), *Biogeosciences* 13, 751-760