



Carbonate biomineralization in terrestrial gastropods: environmental vs. physiological constraints

D. Mierzwa (1) and J. Stolarski (2)

(1) Museum and Institute of Zoology, Polish Academy of Sciences, Warsaw, Poland (dmierzwa@miiz.waw.pl), (2) Institute of Paleobiology, Warsaw, Poland (stolacy@twarda.pan.pl)

Preservational potential of shells of terrestrial gastropods allows to use them as valuable (paleo)climatic proxies. Despite of the fact, that the elements incorporated in their skeleton derive almost entirely from their diet, details of the ion uptake routes have not been studied in details. This work is a first step in the investigations of element uptake and biomineralization processes in pulmonate gastropod *Cepaea vindobonensis* (Férussac, 1821). Although phenotypic plasticity in the shell characters of the species appears to be mainly genetic in nature, some differences seem to correlate with availability of ions used in biomineralization. For example, shells of individuals living in marginal parts of flood plains (environment extreme for the species and generally depleted in calcium) have weakened structure and faded color pattern, whereas individuals from the lime substrata form typically developed, pigmented shells with several cross-lamellar layers. Micro- and nanostructural characteristics of shells from different environments are visualized by SEM and AFM imaging techniques and some biogeochemical properties are characterized by spectroscopic and fluorescence methods. Further experiments are required to elucidate the ion/trace elements transfer between the substratum, nutrients, organism, and the shell.