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Variability in the partition coefficients for Mg and Sr in the shells of the ostracod "Heterocypris salina" from culture experiments

I. Sayyad (1), P. Anadón (1), M. Martín-Rubio (2), F. Robles (3), J. Rodríguez-Lázaro (2), R. Utrilla (1), and A. Vázquez (1)

(1) Institut Ciències de la Terra "Jaume Almera" CSIC, Lluis Solé i Sabarís s.n, E-08028 Barcelona, Spain (isayyad@ija.csic.es), (2) Departamento de Estratigrafía y Paleontología, Facultad de Ciencias, Universidad del País Vasco/EHU, Apartado 644, E-48080 Bilbao, Spain, (3) Instituto Cavanilles de Biodiversidad y Biología Evolutiva, Departamento de Geología, Universitat de Valencia, E-46100 Burjasot, Valencia, Spain

The partition coefficients of trace elements in ostracod shells (KdMe = Me/Ca_{valve} / Me/Ca_{water}, in molar ratios), mainly for Mg and Sr, have been widely used for the reconstruction of paleoenvironments. In order to settle these coefficients for *Heterocypris salina*, juvenile individuals of this ostracod species were grown up to the adult stage in culture experiments in 5 waters with a wide range of hydrochemistry (Mg/Ca_w range from 0.5 to 12, Sr/Ca_w range from 0.005 to 0.02), conductivity (1-17 mS/cm) and at 4 constant temperatures (18, 20, 25, 28ºC). From our experiments, Mg/Ca and Sr/Ca molar ratios of the valve calcite are directly related to the Mg/Ca and Sr/Ca of the water respectively, and to the temperature of the water (T_w). In the case of Mg/Ca the temperature change has equal effect in the whole studied range of Mg/Ca_w, whereas for the Sr/Ca the temperature effect is greater at high Sr/Ca_w. Moreover, Mg/Ca in the valve calcite has a good correlation to the [Mg] in water. KdMg displays very high and diverse values (0.004-0.016) at low Mg/Ca_w (< 2). At high Mg/Ca_w, KdMg displays small variations, and its dispersion can be explained by the T_w: the higher the T_w, the higher the value of the coefficient for a given Mg/Ca_w. Neither the conductivity nor the [Ca] in water appear to have a clear effect on the KdMg. KdSr values are nearly constant, but they increase slightly with the Sr/Ca_w and with the T_w. Other water parameters such as conductivity, [Sr], [Ca], or Mg/Ca_w, do not seem to have effect on the KdSr.

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