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Saving by freezing? Metabolic rates of *Adamussium colbecki* in a latitudinal context

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Abstract:

Abstract Standard metabolic rates of the endemic Antarctic scallop, *Adamussium colbecki* (Smith, 1902), were measured in austral summer and under simulated winter conditions. Average mass-specific metabolic rates were significantly different between “summer” ($151.17 \pm 45.06 \mu\text{l O}_2 \text{g}^{-1} \text{h}^{-1}$) and “winter” ($106.52 \pm 39.65 \mu\text{l O}_2 \text{g}^{-1} \text{h}^{-1}$) animals. The overall metabolic rates of *A. colbecki* are comparable to those of other Antarctic bivalve species, but well below those of temperate scallop species. Data for 24 scallop populations (13 species) from different latitudes give no evidence for elevated metabolic rates in *A. colbecki* as suggested by the concept of “metabolic cold adaptation”. A world-wide comparison of metabolic rate and overall growth performance of scallops indicates that in the Antarctic scallop the energetic advantage of low basal metabolism does not counterbalance the disadvantage of the prolonged seasonal period of food shortage.