

Interactive comment on “Changing mineralogical properties of shells may help minimize the impact of hypoxia-induced metabolic depression on calcification” by Jonathan Y. S. Leung and Napo K. M. Cheung

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Dear editor,

I have read the manuscript by Leung and Cheung on the ability to form calcium carbonate of a tubeworm species under anoxic experimental conditions. After careful assessment, I have to advise to reject this manuscript from publication in Biogeosciences. The experimental design is flawed with only two times two treatments (normoxia versus hypoxia and stress versus no-stress) to allow for a sound analysis of the effect of O₂ and stress on tube-formation. It is unclear how many polychaetes were incubated

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for each treatment, how many survived the experimental period, and exactly how many measurements were done on the formed tubes/ how many analyses were done to determine the respiration, clearance rate, etc. It is a pity that tube length was only assessed once (at the end of the 3-week incubation period) and not throughout the experiment. This would have allowed to estimate whether the worms did not produce their tubes only in e.g. the first days of the experimental period and whether, e.g. absence of an essential nutrient may have hampered growth by these organisms in this experimental setup.

There is no real control group followed to see whether the handling of the specimens in the microcentrifuge tubes affected the worms' functioning. It is unclear how long the incubation were to determine the oxygen uptake (respiration) and whether or not the (under normoxic conditions) O₂ levels already decreased towards 0 within the first period of the incubation. Table 1 lists results with averages and their standard error instead the standard deviation. This would only make sense if very many measurements were performed, but that is impossible to tell from this manuscript. It is unclear how measuring DO under hypoxic conditions with this experimental design can result in accurate respiration rates and how they can be compared to rates under normoxia.

The discussion contains many over-interpretations and conclusions have little relation to the results.

Sincerely,

Lennart de Nooijer

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