Biogeosciences Discuss., 11, C237–C239, 2014
www.biogeosciences-discuss.net/11/C237/2014/

Biogeosciences
Discussions
Open Access

Interactive comment on "Release of hydrogen peroxide and antioxidant by the coral *Stylophora pistillata* to its external *milieu*" *by* R. Armoza-Zvuloni and Y. Shaked

D. Sher

dsher@univ.haifa.ac.il

Received and published: 7 March 2014

Our laboratory is interested in infochemicals (signaling molecules, toxins) produced by cnidarians, and how they affect their biotic environment. Therefore, it was with interest that I read the manuscript by Armoza-Zvuluni and Shaked (for full disclosure, the authors told me the manuscript was under open review in Biogeochemical discussions). Reactive Oxygen Species in general, and peroxide in particular, can act as signaling molecules or as toxins, yet while we know these chemicals are produced by symbiotic cnidarians and released into the environment, we do not know the fluxes, and thus it is difficult to assess whether these molecules are simply released to reduce the oxida-

tive stress inside the cnidarians tissue, or whether they can in fact have allelochemical roles.

The manuscript under review does not provide any answers to these questions, rather, in my opinion, it provides a set of analytical tools enabling measurement of such fluxes (both H2O2 and antioxidant activity) in a simple yet seemingly robust manner. The observation that bleached corals do not release H2O2 under condition of stirring, while not completely unexpected, provides another reason to study mechanisms leading to oxidative damage and bleaching that are independent of the symbionts photosynthetic apparatus. The effect of stirring (as a proxy for flow) is also of interest, both in terms of the physiology of the coral holobiont (e.g. is the change in H2O2 release a passive or active response) and in terms of trying to estimate whether or not the released H2O2 can have an allelopathic or perhaps antimicrobial effect, which is clearly going to be affected by a combination of the kinetics of release and the ambient flow.

With respect to the remarks of referee #1, indeed many or all of his specific remarks are valuable and constructive, and especially the need to organize the M+M in a slightly more user-friendly manner that will make the experiments more repeatable and the need to take into account dilution during sampling. However, I respectfully disagree with his overall statement that the results cannot be evaluated. Specifically, the experiments in which flow is changed were performed with the same fragments and at the same time-frame, and thus I do not see why the applied statistics are wrong, at least for this experiment. These experiments would benefit from the addition of a control showing no change when no change in stirring was applied (potentially provided in Fig 3 or similar data). Also, it would be nice to see whether, if flow is reduced again at the end of the experiment, H2O2 and antioxidant release are also reduced.

In summary, while I think the manuscript could do with some changes, I find it interesting and useful, certainly in the field of chemical ecology, where quantitative studies of the release of potential toxins or signaling molecules from organisms into their environment are sorely lacking.

Interactive comment on Biogeosciences Discuss., 11, 33, 2014.