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Priming for survival: Heat shock protein response in *Anthopleura elegantissima*

*Abstract*

*Introduction*

Intertidal organisms must deal with extreme stressors on a daily basis. As the tide goes out, anemones are often left out of the water for hours and must deal with the threat of desiccation and heat stress. Hsp proteins shield the other proteins within the anemones body to deal with heat stress and desiccation. We believe that anemones prime their system by building up a high level of hsp proteins to be able to survive low tide. We hypothesize that the anemones that are exposed to daily heat shock will have higher levels of hsp expression than the control anemones.

* Talk in more detail about hsp proteins
* Introduce more information about the ecology of the aggregating anemone
* Expand on my hypothesis/reasons behind my thinking

*Methods*

Specimens were collected on November 1 2013 at Southern Alki beach at low tide. Collected about 30 *Anthopleura elegantissa* anemones from the tide pools and brought them back to the lab in a bucket. Four anemones were placed in plastic critter keepers within a flow tank and labeled 1-4. Specimens were left to acclimate to the flow tank for 2 weeks. Tissue samples were taken on 11/13 before the first session of heat shock. Tissue was cut off from the top of each anemone (1-4) and stored in snap cap tubes and put in a -80oC freezer. Anemones 3-4 were placed on a grate out of the water under a heat lamp at 23oC for 2 hours each day for 1 week. Anemones 1-2 were left in the flow tank and were our controls. Tissue samples were taken again 8 days after treatment started and stored in the same way. Proteins were extracted from the tissue samples and quantified to be analyzed further. The SDS-PAGE protocol was followed to set up the Western Blot. Our gel was run at 150 volts and processed to analyze the hsp protein expression in the tissue samples.

*Results*

Something went wrong during the Western blot protocol so we did not get any results.

* Try to interpret our non-results
* We had enough protein in our samples, would have worked if a mistake hadn’t been made
* Talk about expected results

*Discussion*

* What went wrong
* Did not run the gel right?
* Introduce other studies that have been done with hsp protein expression. Evidence of “priming” in other organisms?

*Figures/tables*

* Include a picture of our membrane from the Western blot

*References*

Fang, L. S. et al. 1996. High temperature induces the synthesis of heat-shock proteins and the elevation of intracellular calcium in the coral *Acropora grandis.* Coral Reefs **16:** 127-131.

Sharp, V. A. et al. 1994. Expression of low molecular weight HSP 70 related polypeptides from the symbiotic sea anemone *Anemonia viridis* Forskall in response to heat shock. Journal of Experimental Marine Biology and Ecology 179: 179-193.

Snyder, M. J., S. Rossf. 2004. Stress protein (HSP70 family) expression in intertidal benthic organisms: the example of *Anthopleura elegantissima* (Cnidaria: Anthozoa). Scientia Marina 68: 155-162.