Title

Ocean Acidification Conditions Increase Routine Metabolic Rate and Reduces Hypoxia Tolerance in *Muusoctopus leioderma*

Need to verify Title is correct

Introduction

* As oceans become more acidic the ability of organisms to use calcite and aragonite decreases.
* Dissolution of existing calcite and aragonite structures also is present.
* Decreased pH affect the respiratory pigments of cephalopods
* Impaired respiratory pigments lead to less oxygen for metabolic processes
* A quick acclimatization observed by Drs. Onthank and Trueblood in *Octopus rubescens*
* How would a deep sea octopus fare in such acidic waters? Why are they this shallow (9m instead of 250 to 1400 m) only in Burrows bay?
* Comparatively, the amount of ocean acidification (OA) research on squid and cuttlefish dwarfs OA research on octopuses.

Methods and Materials

* Collection of *Muusoctopus leioderma* (*N* = 12) by SCUBA
* Octopuses were placed in treatment tanks with either a pCO2 of 1,000 *µ*atm or a pCO2 of 1,800 *µ*atm to simulate current and future ocean acidification conditions.
* pH was measured daily by spectrophotometry and alkalinity was measured once per week by alkalinity titration and these data points were used to calculate and adjust the treatment tank pCO2 as needed.
* Routine metabolic rate (RMR) and Critical Partial Oxygen Pressure (pCrit) was measured at 24 hours and then after 7 days in treatment by flow through respiratormetery.
* Statistical analysis was performed using R version 4.0.3 with the package RStudio.

Results

Discussion

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ylab=expression("RMR (µmolO"[2]\*"g"^-1\*"hr"^-1\*")"))