

ABSTRACT

THE BIDIRECTIONAL EFFECTS OF HORMONES ON AGGRESSIVE BEHAVIOR IN THE CONVICT CICHLID FISH (*AMATITLANIA* *NIGROFASCIATA*)

Cortisol is an important indicator of health and behavioral state in fishes and is produced in response to stressors including confinement, handling, and social conflict. An inherent difficulty in measuring circulating cortisol is the implementation of invasive procedures that can be potent stressors. In the first chapter, we investigated whether convict cichlid fish (*Amatitlania nigrofasciata*) mount a significant stress response to beaker confinement and whether they habituate to the collection method. We also determined the relationship between plasma and water-borne cortisol, and changes in cortisol release rates following handling and cortisol administration. Initial beaker exposure induced high cortisol release rates but cichlids habituated after 3–4 exposures. We revealed significant positive correlations between plasma and water-borne cortisol, and increases in water-borne cortisol release rates after cortisol injection that persisted between 4 and 24 h, depending on the dosage. In the second chapter, we evaluated the predictive role of cortisol, 11-ketotestosterone, and testosterone in determining aggressive behavior as well as the responsiveness of these hormones to social conflict. The results showed that there were no significant treatment (control or experimental) effects on the three hormones across pre- and post-fight time points. However, there was a general trend that time has a significant effect on hormones.

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