

Physiological Responses of the *Heterobranchus bidorsalis* (Male) X *Clarias gariepinus* (Female) Hybrid (Heteroclarias) Fingerlings to Different Temperature Levels under Laboratory Conditions

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Abstract : A twelve weeks experiment was carried out on Heteroclarias freshwater hybrid fish fingerlings under laboratory conditions to study the effects of different temperature levels, 26.91 (control), 28.00, 30.00, 32.00°C respectively and their physiological responses to oxygen consumption, ammonia excretion and opercular respiratory beats were evaluated. The oxygen consumption, ammonia excretion and opercular respiratory beats were determined weekly based on standard procedures. The findings revealed that the oxygen consumption of Heteroclarias hybrid fingerlings significantly ($p < 0.05$) increased with increase in temperature. The ammonia excretion were not significantly different ($p > 0.05$) in all the temperature levels. The opercular respiratory beats per minutes showed similar trend in weeks 1,2,4 and 8 but indicated significantly higher ($p < 0.05$) opercular respiratory beats (range= 117.10 ± 2.26 at 30°C to 142.75 ± 3.04 opercular beat at 32°C in week 8) at highest tested temperature levels. However, there was a decreasing trend in the opercular respiratory beats per minute of the controlled fingerlings. Generally, the opercular respiratory beats per minute decreased with increase in fish size. The findings of this study confirmed that increase in water temperature affects the physiology of Heteroclarias hybrid and hence for effective rearing and for profit making, it is essential for the hybrid to be cultured in the temperature range between 26.91°C (control) and 28.00°C.

Keywords : heteroclarias, hybrid, physiological responses, temperature

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