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Effect of Temperature Variations on Survival, Growth Performance and Haematology of African Catfish, *Clarias Gariepinus*

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Abstract

Reports have shown that fish is becoming increasingly important in the diet of a large percentage of the populace worldwide because of its availability, palatability and health provisions. It is also one of the cheapest sources of protein. To encourage more production, specific species have to be studied to unravel guidelines and highlight red lines for their culture. To establish the effect of temperature variation on *Clarias gariepinus* a 56 day study was carried out to evaluate effect of temperature changes on survival, growth performance and haematology of *Clarias gariepinus* fingerlings fed housefly maggot meal (magmeal) diet. Ninety (90) *Clarias gariepinus* fingerlings, (initial mean weight 4.33±0.03g) were subjected to different environmental regulated temperature conditions in three locations (laboratory, outdoor, greenhouse). The observed average temperature was 26.53±0.01°C, 26.06±0.01°C and 31.52±0.00°C for laboratory, outdoor, greenhouse, respectively. Ten fingerlings stocked per experimental tank were fed in triplicates at 5 % body weight in two portions per day. It was observed that different water temperatures affected fish growth. All experimental fish in the greenhouse died after 8 days of exposure. This happened around 14.00 hrs when water temperature reached 40°C. There was no significant difference ($p < 0.5$) in final weight, weight gain, food conversion ratio and standard growth rate among the fish reared in the laboratory (26.53oC) and outside tanks (26.06oC), respectively. The initial carcass crude protein (Cp) value was 58.97 %. At the end of the experiment fish reared in the laboratory had a crude protein value of 63.97±0.06 % Cp and those reared outdoor (26.06oC) had 71.28±0.00 % Cp. No significant difference in values of packed cell volume; white blood cell; haemoglobin and mean corpuscular haemoglobin concentration was found between fish reared in laboratory (26.53oC) and outside (26.06oC). However, the red blood cell (RBC); mean corpuscular haemoglobin and mean corpuscular volume showed significant difference ($p > 0.05$). The result confirms that *Clarias gariepinus* fingerlings reared at a mean temperature of 26oC (within the recorded optimal temperature range for good growth) performed well. *Clarias gariepinus* fingerlings are not able to survive when water temperature reaches to 40oC.

Keywords: Blood Characteristics, Climate Change, fish growth, Temperature

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