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**Assessing the Dietary Amino Acid Requirements of Tilapia,
Oreochromis niloticus Fingerlings**

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Abstract

Oreochromis niloticus fingerlings (initial weight, 4.35 ± 0.24 g) were fed diets with dietary protein levels, ranging from 7.3% – 44.2% dry matter (dm) for eight weeks. Using growth performance and food conversion ratio, the dietary protein requirement of the fingerlings was estimated at 33.32% dietary protein (dm). Dietary protein: Energy (P:E) ratio of this diet was 16.10 mg kJ^{-1} . Dietary essential amino acid requirements for *O. niloticus* were expressed as the essential amino acid composition of the diet with a protein content of 33.32% dm. This follows the concept that protein requirements is the minimum amount needed to meet amino acid requirements and ensure maximum growth. The essential amino acid requirements, as % dm are: Arginine 1.68, Histidine 0.70, Isoleucine 1.15, Leucine 2.15, Lysine 1.98, Methionine 0.10, Phenylalanine 1.13, Threonine 1.11, Tryptophan 0.84, and Valine 1.34. This result was verified by comparing the performance of fish on diets having essential amino acid profile similar to the diet containing 33.32% dietary protein and others mirroring the recommended amino acid requirement for tilapia by SANTIAGO and LOVELL (1988). The specific growth rate among different fish groups was not significantly different. Essential amino acid requirements are therefore not absolute values but rather an indication of concentration range which must be present in fish diet to allow adequate performance of fish. The relative ease of tilapia culture as well as its rapid growth-rate under tropical and semi-tropical climates have led to its widespread distribution. Further intensification of culture methods for tilapias may be successful if perfected diets satisfying all of the nutrient requirements are formulated. This study is aimed at suggesting a simpler method to help those in developing countries determine the amino acid requirements of fish before formulating fish diets.

Keywords: Protein and amino acid requirements, Tilapia