



Tropentag, October 9-11, 2007, Witzenhausen

“Utilisation of diversity in land use systems:  
Sustainable and organic approaches to meet human needs”

## Validation of Essential Amino Acids Requirements of Red Tilapia (*O. mossambicus* × *O. hornorum*) Assessed by the Ideal Protein Concept

KHALED MOHAMED

*Suez Canal University, Faculty of Agriculture, Animal and Fish Production, Egypt*

### Abstract

“Red” tilapias have become increasingly popular in Egypt because of their hardness, fast growth rate and large size adults and their similar appearance to the marine red snapper which has a high market value. The objective of this study was to determine the amino acid requirements of the *O. mossambicus* × *O. hornorum* hybrid taking into account the empirically determined lysine requirements which had been estimated by the ideal protein concept. The determined values are compared with values in the literature.

Red tilapias were raised in 10 experimental concrete ponds with 3 replicates per pond. Twenty fish of fingerling size (5-10 g) per replicate were sampled from each experimental group for determination of whole body amino acids composition. Triplicate samples were oven dried at 105°C for 24 hours, finely powder and sieved. The amino acid composition was determined in acid hydrolysates (6 mol l<sup>-1</sup> HCl) by using the ideal protein concept (essential amino acid ratio). Data was statistical analyzed by correlation test (r) using SPSS Program.

The essential amino acid requirements in g kg<sup>-1</sup> protein were estimated as follows: arginine 40g, histidine 16g, isoleucine 26g, leucine 45g, methionine + cystine 35g, phenylalanine + tyrosine 49g, threonine 33g, tryptophan 8g and valine 30g. Except for higher leucine and lower phenylalanine + tyrosine, estimated requirements for the other essential amino acids were similar to the empirically determined essential amino acid requirements recorded in literature. Based on this data cost-effective diets can be prepared with a nutrient content balanced to suit the requirements of the hybrid *O. mossambicus* × *O. hornorum*. These data will be useful to achieve optimal growth of tilapias especially in the low technology fish production programs in different African countries.

**Keywords:** Amino acid requirements, ideal protein concepts, red Tilapia