



Deutscher Tropentag, October 11-13, 2005, Hohenheim

“The Global Food & Product Chain—
Dynamics, Innovations, Conflicts, Strategies”

Comparative Efficiency of Apparent Protein, Lipid and Dry Matter Digestion of a Laboratory Feed in Three Strains of Nile Tilapia, *Oreochromis Niloticus* (L.)

MAMUN SHAMSUDDIN MOHAMMED, ULFERT FOCKEN, KLAUS BECKER

University of Hohenheim, Aquaculture-Systems and Animal Nutrition in the Tropics and Subtropics, Germany

Abstract

East and Southeast Asian countries contribute more than half of the global tilapia production of above 2 million metric tons. The GIFT (Genetically Improved Farmed Tilapia) and GMNT (Genetically Male Nile Tilapia) strains of Nile tilapia (*Oreochromis niloticus*) have been introduced in many of these countries with the primary aim of enhancing the growth performance of farmed tilapia. The claimed higher growth performance of GIFT might be due to more efficient digestion of their food, higher survival rates or delayed sexual maturation. To investigate the comparative digestion efficiency of protein, lipid and dry matter in a laboratory feed (41 % crude protein and 9 % crude lipid), an experiment was conducted with three strains of Nile tilapia namely, sex reversed GIFT (GIFT: $52 \pm 6.3\text{g}$), genetically male (GMNT: $46 \pm 4.2\text{g}$) and non-sex reversed conventional (CNT: $50 \pm 5.1\text{g}$). Experimental strains were reared individually in a recirculation system at a water temperature of 27°C in 50 l glass aquaria for 10 weeks. Laboratory feed with an inert marker, titanium dioxide (TiO_2), was used to measure the apparent digestibility of protein, lipid and dry matter for the experimental tilapia strains. Feces of individual fish were collected daily by siphoning during 8 weeks of feeding trials and pooled samples from each week were analyzed. At the end of the experiment, there were no significance differences ($p < 0.05$) in individual growth development, specific and metabolic growth rates, or feed conversion efficiency between the three tilapia strains. Preliminary results indicate that feed dry matter, protein and lipid digestibility between the three strains did not show significant differences ($p < 0.05$). We conclude that the three experimental tilapia strains did not differ significantly in the efficiency with which they digested the ingredients of their feed under laboratory scale experimental conditions. The results of the present experiment would be useful in providing some indications to fish farmers in tropical and subtropical regions on the efficiency of the improved strains (i.e., GIFT or GMNT) compared to conventional strains of Nile tilapia.

Keywords: Digestibility, genetically improved farmed tilapia, genetically male Nile tilapia, Nile tilapia (*Oreochromis niloticus*), titanium dioxide (TiO_2)