

Digestibility and feeding value of some feed ingredients fed to tilapia *Oreochromis niloticus* (L.)

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Abstract

The apparent digestibility of protein, organic matter and energy of high-fibre and fibre-reduced sun-flower cakes, Kenya's 'omena' fishmeal, anchovy fishmeal and wheat bran were investigated in tilapia *Oreochromis niloticus* (L.) fingerlings. The feeding values and protein qualities of the above ingredients were also determined at two dietary protein levels. Fourteen diets were formulated, and each was provided to three tanks containing 12 fish in Expt 1 (digestibility study) and 25 fish in Expt 2 (feeding trial). Water temperatures and dissolved oxygen concentrations were maintained above 26°C and 5.5mgL⁻¹ respectively. Anchovy and 'omena' fish-meals each had an apparent digestibility coefficient for protein (ADC-P) of 90%, whereas the fibre-reduced and high-fibre sunflower cakes had ADC-P values of 89% and 86%. Wheat bran had an ADC-P value of 75%, which was significantly lower than those found for the other test ingredi-ents. Apparent digestibility coefficients for energy (ADC-E) and digestible energy values (DE) were 86% and 78% and 4003 kcal kg⁻¹ and 3624kcalkg⁻¹ for anchovy and omena fishmeals respectively. The corresponding values for the plant protein sources were 42% and 30% and 2200kcalkg⁻¹ and 1400kcalkg⁻¹ for the fibre-reduced and high-fibre sunflower cakes respectively. Diets based on the fibre-reduced cake had higher levels of all amino acids than those based on the high-fibre cake. Fish fed diets with 30% protein gained 40 g and had a feed conversion ratio (FCR) of 1.87, whereas those fed diets with 20% protein gained 35 g and had a FCR of 2.2. The source of protein had a significant effect on weight gain.