Evaluation of Skate Meal as a Replacement of Fishmeal in Diets for Nile Tilapia Fry (Oreochromis niloticus)

Erkan Gümüş¹*, Fatime Erdoğan², Baki Aydın¹

¹ Faculty of Fisheries, Akdeniz University, Antalya 07058, Turkey
² Fisheries Programme of Ortaca Vocational School, Muğla Sıtkı Kocman University, Muğla 48600, Turkey

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Abstract

A 12-week feeding experiment was conducted to evaluate the use of skate meal derived from fishery by-catches as a partial or complete replacement of fishmeal in diets for tilapia fry (Oreochromis niloticus). Five isonitrogenous (33%) and isoenergetic (15.3 kJ g⁻¹) diets were formulated to replace 0 (control), 25%, 50%, 75%, or 100% of fishmeal by skate meal. Fish were stocked in triplicate groups of 20 fish in 120-l aquaria and fed three times daily to apparent satiation. Final body weight, weight gain, and specific growth rate in fish fed the diet containing skate meal at a replacement level of 25% were best and statistically similar to those in fish fed the control. Feed intake, feed conversion ratio, and protein efficiency ratio in fish fed the diets containing up to 50% replacement were similar to those fed the control. There were insignificant differences in the crude protein and ash contents of the final fish whole body, however, moisture and lipid content were significantly affected by dietary treatment. The highest apparent digestibility coefficients for protein, lipid, energy, and ash were obtained in fish fed the 25% replacement diet. Together, our results indicate that up to 25% of fishmeal can be replaced by skate meal in practical diets for tilapia fry without causing a significant reduction in growth performance, feed efficiency, body composition, or digestibility.

*Corresponding author. Tel.: +90-242-3106636, fax: +90-242-2262013, e-mail: egumus@akdeniz.edu.tr