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Increase in the Plant Protein Ratio in the Diet of Nile Tilapia, *Oreochromis niloticus*, Using Saccharomyces Cerevisiae-Fermented Sunflower Meal as a Replacement

Mohamed Hassaan[1], Magdy Soltan[2], Mohamed Al-Ashry[2]

[1] *National Institute of Oceanography and Fisheries (NIOF), Egypt*
[2] *Benha University, Dept. of Animal Production, Egypt*

Abstract

This study aimed to improve the nutritional value and utilisation of sunflower meal (SFM) used as feed ingredient for tilapia by an approach of solid-state fermentation with Saccharomyces cerevisiae. The protein content and lipid content were increased, while, phytic acid and tripsin inhibitor were decreased during solid state fermentation process. A feeding trial was conducted to investigate the effect of yeast fermented sunflower meal (YFSFM) on the growth, feed utilisation parameters of Nile tilapia *Oreochromis niloticus*. Dietary fish meal was replaced with yeast fermented sunflower meal (YFSFM) in four isonitrogenous (295 g/kg crude protein and isocaloric 19.5 MJ/kg gross energy) diets. Fish meal was replaced with YFSFM in the experimental diets in four levels 0, 25, 50 or 75 % to formulate four experimental diets (control diet), YFSFM-25, YFSFM-50 and YFSFM-75, respectively. Each diet was fed to triplicate groups of fish with an initial weight 10.30 ±0.12 g. The experiment was conducted for for 84 days. The highest final body weight (FBW), weight gain (WG), specific growth rate (SGR) and the best condition factor (K) were obtained with control diet and YFSFM-25. The lowest growth response was obtained with YFSFM-75. Generally, a positive protein substitution effect was observed at 25 % substitution levels YFSFM-25. The highest feed intake (FI) g/fish and the best feed conversion ratio (FCR) and protein efficiency ratio (PER) were recorded for fish fed control diet and YFSFM-25, with values statistically different from the other treatments. Fish fed different levels of YFSFM did not have a significant impact on dry matter, lipid, crude protein and ash contents of the fish.

Keywords: Growth, *Oreochromis niloticus* , solid state fermentation, sunflower meal

Contact Address: Mohamed Hassaan, National Institute of Oceanography and Fisheries (NIOF), 101 St Elkaser Elainy, 2314 Cairo, Egypt, e-mail: mohamed_shaban200065@yahoo.com