Effects of Substitution of Fish Meal with Black Soldier Fly (Hermetia illucens) Larvae Meal, in Yellow Catfish (Pelteobagrus fulvidraco) Diets

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Abstract

An 8-week feeding trial was conducted to evaluate effects of replacing fish meal (FM) with black soldier fly larvae meal (BSF) on growth performance, feed utilization, and plasma parameters, for juvenile yellow catfish, Pelteobagrus fulvidraco. Six isonitrogenous and isolipidic diets were prepared substituting the FM protein with BSF protein in the following amounts: 0 (control group), 10% (BSF10), 15% (BSF15), 20% (BSF20), 25% (BSF25) and 30% (BSF30). Three replicate groups of juvenile yellow catfish (initial weight of 1.20 ± 0.01 g) were stocked in circular tanks at a rate of 30 fish per tank. The results showed that 20% of the FM in the control diet could be replaced with BSF without significantly reducing weight gain, feed conversion ratio, or whole body and muscle proximate composition. Apparent digestibility coefficients (ADCs) of dry matter, crude protein, crude lipids, gross energy, or amino acids were not affected by 10% FM replacement. 30% FM replacement in the BSF30 diet significantly increased the concentration of cholesterol (CHO) and nitric oxide (NO) in the plasma, and significantly reduced the inhibition of superoxide radical anion formation. In conclusion, it appears that up to 20% of the FM in conventional yellow catfish diets can be replaced with BSF, and thus account for up to 8.9% of the total protein in the diet without causing a significant reduction in growth performance.

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