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## ORIGINAL ARTICLE

## Total replacement of fish meal by enriched-fatty acid *Hermetia illucens* meal did not substantially affect growth parameters or innate immune status and improved whole body biochemical quality of Nile tilapia juveniles

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## Abstract

The study was designed to evaluate the effects of total replacement of fish meal (FM) and fish oil (FO) by vegetable oil and black soldier fly (BSF) larval meal enriched with fatty acids (FAs) in Nile tilapia juveniles. Fish were fed a FMFO control diet compared to a non-FA-enriched BSF diet (BSF/T0) and diets enriched in linolenic acid-ALA (BSF/T1) or in eicosapentanoic acid-EPA (BSF/T2). After 59 days, the BSF diets did not affect growth except for a decrease by the BSF/T1 diet. However, protein utilization and digestibility were reduced by all the BSF diets. FA-enriched diets did not improve the digestive enzyme activities or immune parameters, while lysozyme and ACH50 values were increased by the BSF/T0 diet. Levels of polyunsaturated FAs in the whole body of fish fed ALA or EPA-enriched BSF diets were comparable to those of FMFO controls. The results demonstrate that BSF meal can totally replace FM without substantially effect on growth or innate immune status. The decrease in fish carcass FA quality induced by the BSF meal can be prevented by a well defined protocol for PUFA enrichment. Nonetheless, investigation of the long-term effects of the BSF meal use