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Review of the possibility of replacing fishmeal with insect meal in aquatic diet

***A. Arbab**

Associate Prof., Dept. of Entomology, Takestan Branch, Islamic Azad University, Takestan, Iran

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Abstract

The decrease in the availability and the increase in the prices of fishmeal have prompted the search for sustainable alternatives for aquaculture feeds. Insects, which are part of the natural diet of fish, leave a small ecological footprint and have a limited need for arable land, may represent a good candidate. Fast growth, fast and easy propagation, low-cost production, optimal feed conversion to biomass and the similarity of the amino acid profile (except for histidine, threonine and lysine) with fish meal are considered to be the benefits of insects. However, the amount of fatty acids of insects varies with fish. Some fish meals are rich in omega-3 fatty acids, in particular eicosapentaenoic acid (EPA) and dioxaaetanoic acid (DHA), which is not commonly found in insects. But there are higher ratios of omega-6 fatty acids and unsaturated fats in insects. Insect meal has more protein but less fat than fish meal. Among the insect orders, the Diptera order is most similar to fish meal. The results of the research showed that whilst the breeding of some species, such as salmon, African catfish and Nepal's Tilapia, can be used to completely replace meal of insects, but also species that are less compatible with insect meal. Therefore, further research is needed in this field.

Keywords: Alternative feeds, Aquaculture, Fish, Fish feeds, Fish flour, Insects