



Mini Review Paper

Role of Proper Nutrient Formulation in Fishery and Marine Sciences and related Hygiene issues: A Review

Ganguly Subha, FISCA

AICRP on Post Harvest Technology (ICAR), Department of Fish Processing Technology, Faculty of Fishery Sciences, West Bengal University of Animal and Fishery Sciences, 5, Budherhat Road, P.O. Panchasayar, Chakgaria, Kolkata - 700 094, WB, INDIA

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Abstract

The nutritional requirements for fish mainly depends on the rate of growth of the fish in conjunct with additional influences like size, metabolic function in addition to the environmental influences and management strategies employed for rearing and breeding. However, for preparing and formulating fish feed the economic aspect of each and every ingredient needs to get proper priority as it is well known that appreciable amount of nutritional loss occurs during processing, heat treatment and storage.

Keywords: Fish, formulation, nutrition.

Introduction

Diet for the fishes should be devoid of the harmful antinutritional factors (including mycotoxins majorly, aflatoxicosis, ochratoxicosis and zearalenone) which deteriorate the quality of the diet. The formulated diet should be well acceptable to the fishes and should not pose any adverse effect on their habitat or water system¹. It should contain adequate nutritional ingredients should be formulated as to contain all the essential components which should be balanced and adequate for the proper maintenance of growth, reproduction and overall health of the fishes.

Requirement at different stages of growth

The nutritional requirement among various fish types vary as per their habitat from freshwater to brackish water and to the marine system². The nutrients in the aquafeed should be highly digestible to the fishes with high bioavailability. The feed should also have high storage life and losses due to physical and climatic factors should be minimum. Fishes have varying nutritional requirement depending on their growth phase i.e. from larval, fishling, spawning and up to table fish stage. During the period of maximum growth, the requirement for potential nutrients also rises³.

Role of optimum availability of proximate principles

The energy presence in the diet varies according to the size of the fish species as it is met up by the presence of carbohydrate content⁴. The fatty acid content also varies linearly with it. The vitamin and mineral composition should be in conjunct with the

major proximate principles present in the aquafeed. The availability of minerals varies among various fish species and sources. Phosphorus digestibility in some feeds by channel catfish or rainbow trout is much higher than by the stomachless carp.

In the diet formulation for fishes, the protein finds the upper hand as the most important proximate component in the diet. The overall digestion coefficient of the diet depends on the availability of superior and qualitative protein source. The protein incorporation in the formulated diets should be in optimum ratio with the energy component present therein. Majorly, the protein component should consist of all the essential amino acids⁵. The technical or reagent grade compounds fetch more mineral sources and are more consistent than from usual feedstuffs⁶.

Some of the vitamins are recommended for use in excess of the requirement, as they are subject to some loss. On the contrary, excess fortification with vitamins and micronutrients beyond permissible limits may lead to some loss in the nutrient content majorly during feed processing. Under normal processing and storage conditions the amino acids, several vitamins and inorganic nutrients are relatively stable to heat, moisture and oxidation.

Conclusion

Preparation of proper and optimum dietary formulation for fishes is a primary prerequisite for sustainable and profitable aquaculture, especially in consideration of the long term economic benefit for the rural fisherfolk community.

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