

Effect of Using Different Ratios of Green Algae Powder (*Haematococcus* spp.) in Fish Diets on Growth Rates of Common Carp (*Cyprinus carpio*)

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I. Abstract

The effect of adding different percentages of green algae powder (*Haematococcus* spp.) on the growth rates and survival rates of common carp fingerlings (*Cyprinus carpio*) was studied. Three diets were prepared: the first and second contained green algae powder, and the third was a control containing commercial fish protein. These diets were used to feed 99 fingerlings distributed among 9 plastic containers with a capacity of 25 liters, in 3 treatments (1, 2, and 3) distributed with three replicates for each treatment, with 11 fingerlings placed in each replicate. Treatments 1 and 2 contained 3% and 6% dried algae powder, respectively, while treatment 3 (the control) contained the commercial protein. Relative and qualitative growth rates, feed conversion ratios, and survival rates were calculated. Treatment 2 recorded the highest relative and qualitative growth rates and feed conversion ratios at 76.87%, 1.854%, and 2.375%, respectively. Treatment 1 recorded the highest survival rate at 95%. Significant changes ($p < 0.05$) were detected across the experimental treatments.

Keywords : Artificial feeds, culture, green algae.

II. Introduction

Fish farming is one of the most rapidly expanding food production systems in the world. This rapid expansion relies largely on the increase in fish feed production, most of which contains fishmeal as a primary protein source (Barrows & Hardy, 2002). Global fishmeal production ranges between 6-7 million tons per year. This continuous increase in demand for fishmeal is due to its use in animal feed, particularly in fish feed, which has resulted in increased demand and higher prices (FAO, 2001). Demand for fishmeal for aquaculture reached 32% of total world output in 1999 (New & Wijkstom, 2002) and 37% in 2000, with a projected 79% by 2015 (Chamberline, 2002). Fishmeal has grown increasingly costly over time due to its continued and rising usage in the fish feed business, in addition to being a restricted resource (FAO, 2004). There is continuous interest in employing plant-based ingredients in aquatic feeds, but little is known about the advantages of macroalgae (seaweed) in aquatic animal nutrition as a substitute for fishmeal. The most important effects of seaweed supplementation in aquaculture include increased growth performance, improved feed utilization efficiency, improved nutrient metabolism, and improved fatty acid quality (increased long-chain n-3 polyunsaturated fatty acids) in muscles (Valente et al., 2006), as aquatic seaweed is a source of polyunsaturated fatty acids required for fish growth



