GROWTH AND NUTRIENT DIGESTIBILITY OF JELAWAT (*Leptobarbus hoeveni*) FRY FED WITH VARIOUS DIETARY PROTEIN LEVELS

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ABSTACT

A growth and nutrient digestibility study was executed for jelawat fry in the laboratory. The fry (40 day-old) were reared in 9 aquariums of 37.5L water volume at 30 per tank and fed an isocaloric diet (4.2 kcal) containing 3 dietary protein levels (33, 40, 47%) at 10% of body weight a day for 49 days. Biomass was weighed fortnightly. Chromic oxide (1%) was added to each experimental diet for the digestibility study, which was conducted in 3 conical tanks of 100L water volume each. The results indicated that the effects of dietary protein levels on fish growth and feed conversion efficiency were significantly different. A positive quadratic equation was found for the response of fish growth as well as feed conversion efficiency to various dietary protein levels. Maximum growth and high feed conversion efficiency were observed at about 40% protein level. This feed was well digested by the fry with rates of 76.6, 98.3, 97.7, 54.0, and 98.2% for dry matter, protein, fat, carbohydrate and energy, respectively.

KEYWORDS: **jelawat, fry, protein, digestibility, *Leptobarbus hoeveni*, maroon shark**

INTRODUCTION

The wild-riverine species, jelawat, maroon shark (*Leptobarbus hoeveni*) is a popular table fish and an ornamental fish in Indonesia, especially Sumatra and Kalimantan and in other countries such as Malaysia and Thailand. Its culture has been practised in Indonesia since 1940 and tended to develop rapidly. This species has successfully spawned in a hatchery since 1980 (Ondara and Sunarno, 1987). It was observed that one pair of brooders could yield 15,000 fingerlings, however, this was still lower than its fecundity of 73,000 eggs/kg fish. Low seed production is mainly caused by lack of availability of natural food in the hatchery. Cho *et al.* (1985) suggested rearing fish in a tank with artificial feed containing a balance of nutrients and energy.

Protein is the main factor of a feed formulation to achieve high growth and feed efficiency of fish. Protein is required to build body-protein and as an energy source. Low protein input causes slow growth. However, excess protein input results in inefficiency and indirectly increases ammonia-N in water that at certain level could affect negatively on fish growth (NRC, 1983). Therefore, an optimum level of dietary protein should be determined to enhance maximum potential growth rate of fish in a control tank. It was identified that dietary protein level for maximum growth rate of fish varies, depending on species, size, culture condition, physiological condition, feed formulation, and dietary energy level. In general, Lovell *in* Yamada (1983) stated that omnivorous species required a dietary protein range of about 30-36%. Pathmasothy and Omar (1981a) found dietary protein level for enhancing maximum growth of jelawat fingerlings at 38% in conditions of dietary energy of 2.5 cal/kg feed and using practical feed ingredients. Lower dietary protein (30%--34%) was observed for jelawat of the same size if the experimental diet was semi-purified with dietary energy level of 3.6 cal (Pathmasothy and Omar, 1981b). However, information on protein requirement for jelawat fry was not available. Therefore, this experiment was conducted to evaluate dietary protein for maximum growth of 40 day-old jelawat fry. In addition, the digestibility of this feed was also evaluated.

MATERIAL AND METHODS

Conducted in the laboratory, this study was divided into two parts: evaluating the growth response to dietary protein levels of jelawat fry and the apparent digestibility of different dietary protein levels. A Completely Randomized Design was used.

Three isocaloric feeds were used in this study. Dietary energy was adjusted to an equal level for all experimental feeds at 4.07 Mcal/kg feed. Dietary protein varied, namely 33, 40, 47% (Table 1).

Casein was used as the main source of protein and its content varied in the feed composition. Soybean meal, coconut cake meal, corn meal, rice bran meal, tapioca, vitamin premix, and mineral premix were added in the same percentage for all experimental feeds. Both vitamin and mineral premixes were made based on recommendations of NRC (1977) for common carp fry. In addition, fish oil and corn oil were added in feed formulations at different levels to reach equivalent energy content of feed, but its ratio was

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