

NUTRITIONAL STUDY OF GIANT GOURAMY  
(*Osphronemus goramy*, LACEPEDE) ON A  
FORMULATED PELLET FEED

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FACULTY OF FISHERIES AND MARINE SCIENCE  
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APPROVAL SHEET

BY:

CHONG KAM KIN

A Project Report Submitted in Partial Fulfilment of the  
Requirement for the Degree of Bachelor of Science (Fisheries).

*A. Nur*  
*25/5/85*

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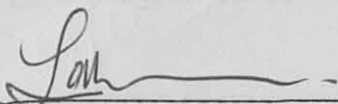
The undersigned certify that they have read and they commend to the Faculty of Fisheries and Marine Science, for the acceptance, a research project report entitled :-

NUTRITIONAL STUDY OF GIANT GOURAMY (OSPHRONEMUS GORAMY, LACEPEDE)  
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Submitted by :-

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in partial fulfilment of the requirement for the Degree of Bachelor of Science (Fisheries).

  
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Associate Professor Dr. Law Ah Theem.  
Supervisor

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Chairman of Research Committee.

Date: \_\_\_\_\_

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The author also wishes to thank Associate Professor Dr. Ang Koo Joo for providing the experimental fish and Mr. Mohd. Saifullah Kamaruddin for reading through the manuscript. The author is also very much indebted to Mr. Kabir Ahmed and Mr. Lim He Sun for their technical help. Without their help, it would be impossible for the author to complete this project.

## DEDICATION

This project is dedicated to my parent, brother and sisters.

to all the lecturers and technical staff of the Faculty of Fisheries and Marine Science, Universiti Pertanian Malaysia for their encouragement, support and contribution toward the success of this project.

This project was partly funded by IDRC, IFS, Sweden and Universiti Pertanian Malaysia.

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## ABSTRACT

The digestion coefficients of the nutrients of all the ingredients used in the formulation of the reference diet ( MARDI 37% protein feed ) were estimated in the giant gouramy. The ingredients in the MARDI 37% protein feed were fish meal, soya bean, maize, copra cake and rice bran. The fish with an initial mean total length and weight of  $18.7 \pm 0.9$  cm and  $95.3 \pm 16.3$  g, respectively, were maintained in a funnel-shaped tank of 0.7 m in height and 1.3 m in diameter. The tank was supplied with aeration and continuous seasoned water at a rate of 25 litres/hour. 1 % of chromic oxide was incorporated in each diet as an internal marker for the evaluation of digestibility. Water parameters such as temperature, pH, dissolved oxygen and ammonium-nitrogen were monitored throughout the study period of 9 weeks.

The results indicated that fish meal was the most digestible ingredient in the reference diet. The digestion coefficients of dry matter, protein, ash, fat and gross energy were close to 100% except for carbohydrate which was only 75.87%. The apparent digestion coefficients of dry matter, carbohydrate and gross energy in maize were 96.10%, 111.86% and 95.38%, respectively. These values were higher than that in soya bean, copra cake and rice bran. In fact, maize was the only ingredient which had a 100% digestion coefficient for carbohydrate, indicating that maize was a good supplier of carbohydrate to the fish. However, the protein digestion coefficient in maize was lower than that of soya bean and copra cake.

Suprisingly, copra cake was well digested by the giant gouramy especially in term of protein and gross energy digestion. In fact, copra cake could be a suitable choice in replacing partly fish meal as a supplier of protein in the formulated feed for this fish. It is definitely the best and cheapest source of energy supplement for the giant gouramy. Even though the digestion coefficients of protein, ash, carbohydrate and gross energy were low in rice bran, it could be used as a fat supplier for the giant gouramy due to its high fat content. Besides this, rice bran also can be used as a binder in the processing of the pellet feed.

In fact, this study revealed that the nutrients in all the ingredients used in the formulation of the reference diet were well digested by the giant gouramy. Hence, the reference diet could be used as a basic feed for the mass production of this fish.



## ABSTRAK

Pekali pencernaan nutrien-nutrien di dalam semua ramuan yang digunakan untuk perumusan diet rujukan ( makanan 37% protein MARDI ) telah dianggarkan dalam ikan kalui. Ramuan-ramuan dalam makanan 37% protein MARDI adalah hampas ikan, kacang soya, jagung, hampas kopra dan dedak. Ikan-ikan dengan min jumlah panjang  $18.7 \pm 0.9$  sm dan berat  $95.3 \pm 16.3$  g telah dipelihara dalam tangki yang berbentuk corong berukuran 0.7 m tinggi dengan garispusat 1.3 m. Tangki-tangki itu telah dibekalkan dengan pengudaraan dan air bersih yang berterusan pada kadar 25 liter/jam. 1% kromik oksida telah digabungkan dalam setiap diet sebagai penanda dalaman untuk penilaian pencernaan. Parameter-parameter air seperti suhu, pH, oksigen larut dan ammonia-nitrogen telah diambil sepanjang tempoh kajian selama 9 minggu.

Keputusan menunjukkan bahawa hampas ikan merupakan ramuan yang paling utama dicernakan dalam diet rujukan. Pekali pencernaan bahan kering, protein, abu, lemak dan tenaga adalah menghampiri 100% kecuali karbohidrat yang hanya 75.87% sahaja. Pekali pencernaan bahan kering, karbohidrat dan tenaga dalam jagung adalah 96.10%, 111.86% dan 95.38% masing-masing. Nilai-nilai ini adalah lebih tinggi daripada yang terdapat pada kacang soya, hampas kopra dan dedak. Pada dasarnya, jagung merupakan ramuan yang mempunyai pekali pencernaan 100% bagi karbohidrat. Ini menunjukkan bahawa jagung adalah satu pembekal karbohidrat yang baik untuk ikan tersebut. Bagaimanapun, pekali pencernaan

protein dalam jagung adalah lebih rendah daripada yang terdapat dalam kacang soya dan hampas kopra.

Adalah menghairankan bahawa hampas kopra dicerna dengan baik oleh ikan kalui, terutama dari segi pencernaan protein dan tenaga. Pada dasarnya, hampas kopra adalah sesuai dalam pengantian separa hampas ikan sebagai pembekal protein dalam perumusan makanan untuk ikan ini. Hampas kopra pasti merupakan sumber tenaga yang baik dan murah untuk ikan kalui ini. Walaupun pekali pencernaan protein, abu, karbohidrat dan tenaga adalah rendah dalam dedak, ianya boleh digunakan sebagai pembekal lemak untuk ikan kalui disebabkan oleh kandungan lemaknya yang tinggi. Selain daripada ini, dedak juga bertindak sebagai pengikat dalam pemerrosesan pellet.

Pada dasarnya, kajian ini menunjukkan bahawa nutrien-nutrien dalam semua ramuan yang digunakan untuk perumusan diet rujukan dicernakan dengan baik oleh ikan kalui. Oleh yang demikian, diet rujukan boleh digunakan sebagai bahan makanan asas dalam pengeluaran secara besar-besaran untuk ikan ini.