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Chemical composition of two different natural food complexes present in semi-intensive milkfish grow-out ponds

Introduction

Milkfish (*Chanos chanos* Forsskål) is the most important cultured finfish species in the Philippines. One of the management methods regularly used in milkfish pond culture is the semi-intensive production system, which includes the fertilization of ponds to enhance the growth of natural food. However, less is known about the chemical composition of the natural food in such ponds. Two types of natural food are generally distinguished, a mat consisting of filamentous green algae (*lumut*) and a complex of filamentous and unicellular blue-green algae and diatoms (*lablab*). The present study aimed to evaluate the chemical composition of both types of natural food.

Material and methods

Two commercial fish farms under different management methods were monitored on Panay Island, Philippines between March and August 1998. Natural food in one farm consisted mainly of *lumut*, while in the other farm *lablab* was the dominant type of natural food; both of these were collected and freeze-dried for later analysis of chemical composition (amino acids, trypsin inhibitor, fatty acids, carotenoids and mineral concentration). Results were compared with the nutrient requirements of milkfish.

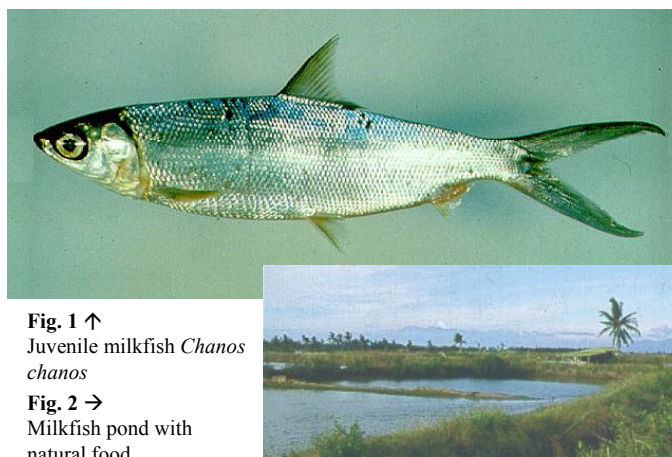


Fig. 1 ↑
Juvenile milkfish *Chanos chanos*

Fig. 2 →
Milkfish pond with natural food

Results and conclusions

Tab. 1: Average Essential Amino Acid content of different natural food types in percent from milkfish ponds in the Philippines

Natural Food	Arginine	Histidine	Isoleucine	Leucine	Lysine	Methionine	Threonine
lablab	5.0±0.3	4.9±0.2 ^a	5.1±0.4	8.2±0.3	4.1±0.3	1.7±0.2	5.5±0.4
lumut	4.6±0.8	2.9±0.6 ^b	3.8±0.9	6.1±1.3	3.8±0.9	1.5±0.4	4.2±1.0

Values in a column not sharing a common superscript differ significantly ($p < 0.05$)

Tab. 2: Average carotenoid profile of different natural food types in µg / g dry matter from milkfish ponds in the Philippines

Natural Food	α-Carotenoid	β-Carotenoid	Lutein	Zeaxanthin	Total
lablab	0.5±0.1 ^a	3.9±1.1 ^a	0 ^b	3.2±0.4	24.3±7.9 ^b
lumut	0 ^b	0.4±0.6 ^b	41.8±3.7 ^a	5.9±6.7	104.9±40.2 ^a

Values in a column not sharing a common superscript differ significantly ($p < 0.05$)

Fish feeding on *lablab* had a higher growth rate than fish relying on *lumut*. These findings are supported with the results shown above, which suggested a higher metabolizability and nutritional quality of *lablab* over *lumut* due to higher quality of dietary protein, no trypsin inhibitors and more retinol precursors.