STUDY ON PERCENTAGE OF PADDY CRAB MEAL(*Somanniathelphusa sp.*) ADDITION IN TILAPIA DIET

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ABSTRACT

There are more than 8 species of paddy crab (*Somanniathelphusa spp.*) in Thailand, all of them are pest that can destroy rice fields easily, if they are in high population. Paddy crabs meal were collected from earthen pond of Faculty of Fisheries Technology and Aquatic Resources. All of them were dried at 60°C for 4-6 hours and grinded with grinder to make paddy crabs meal (PCM) for test diets. Sex reversal tilapia at initiate weight 0.86 $\pm$ 0.04 g. were fed on 4 formulas test diets which contain 25% protein prepared by adding by 0, 10, 20 and 30 % PCM in substitution for the fishmeal position. After 120 days experiment showed no different growth, food conversion ratio and survival rate ($P>0.05$). Therefore, paddy crabs meal can be used as protein source in tilapia culture.

INTRODUCTION

There are at least 8 species of paddy crab in Thailand, all species are in genus *Somanniathelphusa*. Paddy crab is a big problem for Thailand's farmers, because all of them are pest that can destroy paddy rapidly. In rainy season, it is suitable for rice growing, however, at the same time all crabs have activities such as growth, molting, mating, including storage food for hibernation during summer. Therefore they try to consume as much as possible. According to these reasons, rice in paddy field can be destroyed easily by crabs (Sehabutra, 1985).

Tilapia culture is very common in Thailand. The statistical data from Department of Fisheries recorded 203,737 tons and value of 174 Millions USD for tilapia culture in year of 2005 (DOF, 2005). As we known that the feeding cost in tilapia aquaculture is the highest among operating cost. Therefore, good management and local raw material can reduce feeding cost. (De Silva *et. al.*, 1986). To reduce cost, simple method using local materials should be suggested to the farmer.

Sado (1989) reported that it is possible of using plants substitute to fish meal that contain 20% protein in tilapia culture throughout marketable size. However, sex reversal tilapia nursery fed 2-3 times daily using 25-30% protein was recommended by Viwattanachaiseth (1998). Furthermore,

tilapia size of 5-30 g should fed 3-7% by weight with 2-6 times daily (Chuerpohuk, 1999).From the reasons above, the objective of study aims to use paddy crab substitute for fish meal in tilapia diet for reducing cost to farmer and reducing pest .

MATERIAL AND METHOD

Paddy crabs (*Somanniathelphusa spp*) were collected from the earthen pond, then dried at 60^{o}C for 4-6 h and grinded to powder. After that the diets with 25% protein formulated with 0, 10, 20, 30 % paddy crab meal (PCM) substituted to fish meal were prepared as shown in Table 1.

The experiment is in CRD design. Sex reversal tilapia (*Oreochromis niloticus*) at size of 0.86$\pm$0.04 g were cultured in 1x1x1 m^3 net cages at density of 100 fish/cage. They were fed 6 % by weight, twice a day at 9.00 and 16.00 for 120 days. Fish growth (wet weight), FCR and survival rate were collected and subjected to one-way analysis of variance (ANOVA) using Microsoft Excel and present as mean $\pm$ SD(standard deviation).

Table 1. Composition and protein percentage of test diets

Raw material(%protein)	Formula 1 0% PCM(g.)	Formula 2 10% PCM(g.)	Formula 3 20% PCM(g.)	Formula 4 30% PCM(g.)
PCM(24.66)	0.0	1.7	3.4	5.1
Fishmeal(55.80)	17.0	15.3	13.6	11.9
Soybean meal(41.61)	22.0	24.0	25.0	26.5
Broken rice (7.15)	22.0	20.0	19.0	18.0
fine rice bran(12.77)	38.0	38.0	38.0	37.5
premix	1.0	1.0	1.0	1.0
total	100	100	100	100
% protein	25.07	25.23	25.04	25.00

RESULT

After 120 days the experiment showed there are no difference in growth rate, food conversion ratio, and survival rate (P>0.05) among formula 1, 2, 3 and 4 treated fish (table 2). It showed that paddy crab meal can be used as substitution for the fishmeal position in tilapia

culture. All raw materials were determined protein percentage as show in braces and all diets contain 25% protein as show in table 1.

Table 2. Final weight, specific growth rate, food conversion ratio and survival rate of tilapia fed by different level of paddy crab meal.

Formula (%PCM)	Final weight (g.)	Specific Growth rate (g/day)	Food Conversion Rate	Survival rate (%)
0 % PCM	26.27±0.23[a]	0.2119±0.0019[a]	2.58±0.22[a]	81.33±9.87[a]
10%PCM	26.75±0.07[a]	0.2160±0.0006[a]	2.50±0.07[a]	88.67±2.52[a]
20%PCM	27.71±0.94[a]	0.2233±0.0079[a]	2.62±0.18[a]	77.00±1.00[a]
30%PCM	26.16±3.20[a]	0.2109±0.0267[a]	2.57±0.06[a]	81.00±4.58[a]

DISCUSSION

The results showed no significant different among all test diets because they contain the same protein percentage, therefore growth, food conversion ratio and survival rate were the same . At 25% protein level, it is enough for tilapia culture as Viwattanachaiseth (1998) has reported.

This experiment used 2 times feeding rate that was enough for tilapia culture Viwattanachaiseth (1998) ; Chuerpohuk (1999)

This experiment has been done during October-January, while water temperature during November-January was below 25^{o} C. Thailand's Department of Fisheries (1998) suggested the optimal temperature range for tilapia culture is about 25-30^{o} C. This temperature may effect on growth of tilapia which seem to be slightly lower than usual , and food conversion ratios have seem to be slightly higher than usual, because fish has to spend more energy to resist low temperature (Whangchai, 1997) This coincide with Dan and Little (2000) who reported that tilapia show temporary poor growth while culture in wintertime. Another water qualities of the experiment is in the optimal range(Bhujel, 2000 ; Boyd, 1990).

From this experiment we suggested that paddy crab meal can be used as supplementary local raw material for tilapia culture while protein percentage is 25% or more.

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