1981

Improvement of diet attractability for Penaeus monodon by supplementing various attractants

Murai, T.

Aquaculture Department, Southeast Asian Fisheries Development Center

Murai, T., Sumalangkay, A., & Pascual, F. P. (1981). Improvement of diet attractability for Penaeus monodon by supplementing various attractants. SEAFDEC Aquaculture Department Quarterly Research Report, 5(1), 1–4.

http://hdl.handle.net/10862/2382

Improvement of diet attractability for *Penaeus monodon* by supplementing various attractants

T. Murai, A. Sumalangkay and F.P. Pascual

Since feeding response of shrimp is very slow, it is desirable for shrimp diet to emit some chemotactically favorable substances. Although various substances such as certain amino acids and clam, fish or squid extract have been shown to be attractants to shrimps, no such substance which attract *P. monodon* has been reported yet.

This experiment was carried out to test the effect of supplemental krill meal, earthworm meal, glycine, sucrose or mussel water on the diet attractability for *P. monodon.* The composition of the test diets and their proximate chemical analysis are shown in Tables 1 and 2, respectively. Full-fat soybean meal (roasted at 170-180°C for 15 minutes) was used in diets 1-6 instead of ordinary soybean meal which was used in the maintenance diet (diet 7). The ratio of the full-fat soybean meal for the diets 1-6 was increased from 15% (for the maintenance diet) to 25% at the expense of fish meal to make amino acid composition of the diets closer to that of *P. monodon's* whole body.

Twenty P-58 *P. monodon* were randomly stocked in each of 14 aquaria with 40 liters of water and were fed the maintenance diet for one week previous to the study. After acclimatization, they were measured for length and weight. Each diet was randomly assigned to duplicate aquaria. Attractability of the diets was determined by the time elapsed from the moment that the pellets sank to the bottom to the time that any one shrimp (except one which happened to be close to the pellet) grasped the pellet. The determinations were conducted twice a day in the morning (9:00) and afternoon (6:00) for three consecutive days.

Results are summarized in Table 3. The diets without any attractant (diet 1 and 7) showed similar attractability both in the morning and afternoon feeding. Compared to these diets, addi-

Table 1. Composition of the experimental diets containing various types of attractants.

Ingredient	Diet No.						
	1	2	3	4	5	6	7**
Shrimp meal	150 g	150 g	150 g	150 g	150 g	150 g	
Full fat soybean	250	250	250	250	250	250	
Fish meal	200	200	150	200	200	200	
Krill meal		50					
Earth worm meal			50				
Glycine				20			
Rice bran	150	150	150	150	150	150	
Rice meal	170	170	170	170	170	170	
Sucrose					50		
Crude sago starch	50	50	50	30		50	
Cod liver oil	20	20	20	20	20	20	
Vit-Min mix*	9.5	9.5	9.5	9.5	9.5	9.5	
Vitamin C	0.5	0.5	0.5	0.5	0.5	0.5	
Water	340	340	340	340	340	340***	
Total (w/ water)	1340	1340	1340	1340	1340	1340	

* Refer to Felicitas P. Pascual

** Maintenance diet for prawn (2-S), refer to Felicitas P. Pascual.

*** Mussel water, which was obtained by boiling whole mussel for 30 minutes.

Table 2. Proximate chemical analysis of the test diets.

Diet No.	Crude Protein	Crude Fat	Crude Fiber	Ash	Moisture
1	36.35	12.47	5.24	11.52	2.04
2	35.58	12.92	5.32	11.55	1.00
3	36.04	13.33	5.30	10.64	2.00
4	38.38	12.96	5.58	11.29	3.00
5	33.54	12.41	5.25	10.94	2.00
6	35.96	12.13	5.81	11.27	2.00
7	25.96	9.84	5.88	18.19	4.50

Table 3. The effect of various attractants supplemental to the diets on the time elapsed (seconds)* before shrimps grasped the diet.

Diet No.	Attractants	Feeding Period	
		A.M.	P.M.
1	None	34.0 ± 5.51^{d}	30.0 ± 11.06^{bc}
2	5% krill meal	29.8 ± 7.5^{bcd}	27.3 ± 6.35^{abc}
3	5% earthworm meal	23.7 ± 6.56^{abc}	30.7 ± 7.42^{bc}
4	2% glycine	15.3 ± 5.01^{a}	22.3 ± 6.44^{ab}
5	5%	36.3 ± 8.50^{d}	25.8 ± 7.68^{abc}
6	Mussel water	21.8 ± 6.71^{ab}	17.3 ± 8.64^{a}
7	Control (maintenance diets 2s)	32.0 ± 10.30^{cd}	34.3 ± 13.29^{c}

*Mean $\pm$ S.D. of values from duplicate tanks for 3 consecutive days.

tion of krill meal, earthworm meal and sucrose, improved the diet attractability to a certain extent either in the morning or afternoon feeding, but not significantly. The supplement of glycine or mussel water significantly ($P < 0.05$) improved diet attractability. Improvement of attractability by adding mussel water may be partly due to the fact that these shrimps had been raised with mussel meat. Like *P. japonicus,* supplemental glycine may be an attractant for *P. monodon* and diet attractability could be improved by adding glycine to the diet. The results of growth response and feed efficiency will be reported later.

Literature cited:

Pascual, F.P. Nutrition and feeding of sugpo *Penaeus monodon.* Aquaculture Extension Manual No. 3, SEAFDEC Aquaculture Dept., Tigbauan, Philippines.