

Quantitative dietary requirement of juvenile grass shrimp *Palaemonetes varians* (Leach) for lysine, methionine and arginine



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Objective

To determine the dietary requirements of juvenile *P. varians* for lysine, methionine and arginine

Conclusions

Based on the weight gain and a broken line model, dietary requirements of juvenile *P. varians*, expressed as g/100 g diet, were: 2.5 for lysine, 0.8 for methionine and 1.9 for arginine

Material and methods

Rearing conditions

Initial shrimp weights averaged 17±6 mg
Postlarvae were stocked in 40-l fibreglass tanks with 50 shrimp per tank according to a completely randomised design with three replicates per treatment

Temperature: 19.7°±0.1°C, salinity: 37.6‰ and photoperiod: 12L:12D

Feed was supplied twice a day (≈10% shrimp's body weight)

Experiment lasted 45 days

Diets

Shrimp were fed one of 15 test diets (45% crude protein, 7% lipid) containing fish meal, gelatine and wheat gluten as intact protein sources and crystalline L-amino acids

Diets were formulated to meet all known nutritional requirements of shrimp, except for the amino acids studied (either lysine, methionine and arginine)

Graded levels of lysine were incorporated to obtain 1.3, 1.7, 2.1, 2.5 and 2.9 g/100 g diet, methionine at 0.6, 0.8, 1, 1.2 and 1.4 g/100 g diet and arginine at 1.1, 1.5, 1.9, 2.3 and 2.7 g/100 g diet

All diets were offered in excess and adjusted daily based on visual observations of uneaten diet and survival. On a daily basis, uneaten feed, faeces and dead shrimp were removed from the tanks



Palaemonetes varians

Results

Lysine requirement

Mean weight gain ranged from 76.7 to 98 mg/shrimp

Survival rates varied from 89 to 98% and were higher in diets with higher lysine supplementation

The lysine dietary requirements of juvenile *P. varians*, was 2.5 g/100 g diet

Methionine requirement

Mean weight gain ranged from 75.8 to 91.8 mg/shrimp

Survival rates varied from 84 to 93% and were higher in diets with higher methionine supplementation

The methionine dietary requirements of juvenile *P. varians*, was 0.8 g/100 g diet

Arginine requirement

Mean weight gain ranged from 75.8 to 86.7 mg/shrimp

Survival rates varied from 92 to 99%

The methionine dietary requirements of juvenile *P. varians*, was 1.9 g/100 g diet

