Quantitative dietary requirement of juvenile grass shrimp Palaemonetes varians (Leach) for lysine, methionine and arginine (0)

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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 method

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

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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



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)

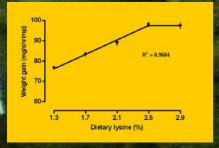
arginine)
Graded levels of lysine were incorporated to obtain 1.3, 1.7, 2.1, 2.5 and 2.9 g/100 g diet, methionine at 0.6, 0.8, 1, 1.2 and 1.4 g/100 g diet and arginine at 1.1, 1.5, 1.9, 2.3 and 2.7 g/100 g

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

Results

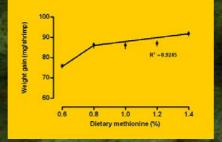
Lysine requirement

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%

99% The methionine diet requirements of juvenile *varians*, was 1.9 g/100 g diet

