NET ENERGY VALUE OF CEREALS FOR THE BLACK TIGER PRAWN (*Penaeus monodon*)

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Values of digestible, metabolisable and net energy (NE), along with information on the chemical analysis of ingredients, constitute feeding tables that are used extensively in the formulation of complete diets for a range of animals. In aquaculture, knowledge of the nutritional value of various feeds is often limited to the chemical analyses, and reliable information on their energy values is very scarce. This paper investigates the NE system as a method of ingredient evaluation for prawns, with emphasis on the black tiger prawn (*Penaeus monodon*).

Four cereals, sorghum, wheat, rice and sago, were ground and individually incorporated into a base diet (48% crude protein) at a rate of 15% test ingredients to 85% base diet. The NE for growth (NEg) value of each test ingredient was determined by the difference in energy retention (ER) (kJ) due to intake at maintenance from that at just under *ad libitum* divided by the intake (g) of test ingredient.

There was no significant difference in growth and the feed intake between treatments except for the base diet group in which the feeding rate was at maintenance level (Table 1). The average values of NEg for sorghum, wheat, rice and sago were 6.63 kJ/g, 7.22 kJ/g, 7.56 kJ/g and 5.84 kJ/g, respectively ($P<0.05$). Previous studies with different carbohydrate sources such as wheat, rice and sorghum showed that prawns convert nutrients from these sources with equal efficiency (Huang 1988; Cruz-Suarez *et al*. 1994). Results from the present study suggest that energy in all four carbohydrate sources is digested and utilised at similar rates.

Table 1. Performance of prawns fed experimental diets (average ± s.d.)[1]

Diet groups	Weight gain (kJ/prawn)	Feed intake (g/prawn)	Energy retention (g/prawn)	Energy retention (kJ/g diet)
Base diet (maint.)	0.47±0.24[b]	3.25±0.09[b]	-0.42±0.82[a]	-0.12±0.22[a]
Base diet (*ad lib.*)	2.35±0.62[a]	9.72±0.34[a]	8.52±4.1[a]	0.78±0.35[a]
Sorghum	3.00±0.35[a]	9.45±0.31[a]	15.59±1.76[b]	1.53±0.06[b]
Wheat	3.15±0.65[a]	9.55±0.57[a]	16.65±4.95[b]	1.62±0.44[b]
Rice	3.19±0.54[a]	9.51±0.47[a]	17.05±0.64[b]	1.61±0.17[b]
Sago	3.17±0.88[a]	10.13±0.56[a]	15.88±6.63[b]	1.40±0.56[b]

[1]Means of three replicate groups. Means with the same superscript in the same column are not significantly different ($P<0.05$)

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