

## **Relationships between growth and retention of dietary lipids in juvenile southern rock lobster *Jasus edwardsii***

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**Background** - Diet development for the new aquaculture candidate, the southern rock lobster, *Jasus edwardsii* is based presently on fish meal-fish oil based diets. Novel dietary lipid sources were included in formulated diets in order to assess the effect on lobster growth and energy utilization in the main energy storage organ, the digestive gland.

**Objective** - To investigate the relationship between dietary lipid source and growth, body lipid composition and histology of the digestive gland in the southern rock lobster, *Jasus edwardsii*.

**Design** - Commercial lipid sources (fish oil, tuna oil, canola oil and lecithin) and marine meals containing lipid (fish meal, squid meal and mussel meal) were formulated to make six isoenergetic and isolipidic diets. Diets were fed to triplicate groups of 15 lobsters (1.5 g) over a 12 week period. Lobster growth, biochemical composition, digestive gland fatty acid, lipid class and histology were assessed.

**Outcomes** - The replacement of fish oil with alternative marine or terrestrial oils yielded no differences in weight gain or survival of lobsters; however the productive protein value was closely correlated with the dietary lipid class profiles. Diets containing the mussel meal promoted significantly faster growth than lobsters fed squid meal. The productive protein values were correlated to the dietary lipid class structure and the lipid storage in the digestive gland assessed by histology.

**Conclusions** - There appears significant potential to replace fish oil in formulated diets for southern rock lobster, without affecting growth. However, using this new information on lobster lipid utilization, more efficient diets may be formulated to optimize productive protein values and increase the current growth performance of cultured lobsters.