

Assessing the feasibility of dietary soybean meal replacement for fishmeal to the swimming crab, *Portunus pelagicus*, juveniles

ABSTRACT

The feasibility of dietary soybean meal (SBM) replacement for fishmeal was evaluated to the swimming crab *Portunus pelagicus* juveniles over six consecutive molts by measuring their growth, development, hemolymph cholesterol, triglycerides, phosphate, whole-body crude protein and cholesterol as well as hepatopancreatic trypsin activity, histopathology and glycogen reserves. A total of six isonitrogenous, isolipidic and isoenergetic diets were formulated with SBM replacing fishmeal at 0 (control), 20, 40, 60, 80 or 100% of total dietary protein. Each treatment consisted of 30 replicate crabs starting from the first juvenile stage and after the crabs molted to the seventh stage, three-day post molt crabs were sampled. Results showed that crabs fed the 20% SBM diet had the best growth, which was significantly higher than the control diet (0% SBM). Growth became significantly lower in the 60% dietary SBM treatment and above, while hemolymph cholesterol, triglycerides and phosphate significantly decreased with increasing dietary SBM. The whole-body moisture, crude protein and cholesterol were unaffected by dietary SBM. Meanwhile, hepatopancreatic trypsin activity significantly decreased in the 20 to 60% SBM treatments, with a further significant decrease in the 80 and 100% SBM treatments. Hepatopancreatic damage, significantly fewer epithelial cells and glycogen reserves occurred at 60% SBM and above. Results indicate that dietary SBM can replace up to 40% of fishmeal in the diets of *P. pelagicus* juveniles without reducing their growth or hepatopancreatic condition.

Keyword: Trypsin; Hepatopancreatic histopathology; Glycogen; Fish meal replacement; *Portunus pelagicus*