

Dietary protein requirement of young starry flounder  
*Platichthys stellatus* (Pallas) fed isocaloric diets

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### **Introduction**

In nutrition studies of fish, determining the optimum dietary protein level for growth of fish is generally a primary consideration because protein is not only the major constituent of fish body, but also it has critical functions as enzymes and hormones. Therefore, a continuous supply of protein with well-balanced amino acids is required for the maintenance and growth of fish. Without satisfying the dietary protein requirement, the normal growth of fish cannot be achieved. Many studies have been carried out to determine the protein requirements of commercial fish, and the estimated protein requirements range from 30% to 55% of diet. Starry flounder *Platichthys stellatus* (Pallas) is becoming a candidate marine fish species for aquaculture in Korea, however no information on nutrient requirements for this species is available. Therefore, this study was conducted to determine the optimum dietary protein level for growth of starry flounder.

### **Materials and Methods**

After the four weeks conditioning period, flounder (90 g/fish) were randomly allocated into 15 green circular fiberglass reinforced plastic tanks (300 L) with 20 fish to each tank. Three replicate groups of fish were

hand-fed to visual satiety two times daily at 0900 h and 1700 h for 60 days. Filtered seawater was supplied at a flow rate of 10 L/min to each tank. The water temperature was maintained at  $16.1 \pm 1.35^{\circ}\text{C}$ , and photoperiod was left at natural condition during the feeding trial. The five experimental diets containing 40%, 45%, 50%, 55% and 60% protein levels were prepared. The contents of fish meal and casein in the diets increased mainly at the expense of dextrin and  $\alpha$ -cellulose to increase the protein level. The energy and lipid levels of the diets were designed to be isocaloric (4.7 kcal/g diet) and isolipidic (7%).

## Results and conclusion

Survival and condition factor were not affected by dietary protein level. Weight gain of fish fed the diet containing 50% protein was significantly higher than that of fish fed the diets containing 40%, 45% and 60% protein ( $P < 0.05$ ). Feed efficiency of fish fed the diet containing 50% protein was significantly higher than that of fish fed the diet containing 40% protein ( $P < 0.05$ ). Protein efficiency ratio of fish fed the 60% protein diet was significantly lower than that of fish fed the 50% protein diet ( $P < 0.05$ ). Moisture, crude protein and crude ash composition of whole body were not affected by dietary protein level. The results of this study indicate that 50% dietary protein level could be recommended for the optimum growth and efficient protein utilization of young starry flounder.

## References

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