

D - 1

Evaluation of various fish meals as dietary protein source for juvenile flounder (*Paralichthys olivaceus*)

Sang-Min Lee and Hyun-Seok Jang

Faculty of Marine Bioscience & Technology, Kangnung National University,
Gangneung 210-702, Korea

Introduction

Dietary proteins are the most important factors affecting growth performance of fish and feed cost. Generally, most of the formulated diets for marine fish include a large amount of fish meal as a protein source because of its high nutritive value and palatability. Quality of fish meal in diet may affect on growth and feed efficiency of fish. Therefore, this study was conducted to evaluate the effect of various fish meals as dietary protein source on growth and feed utilization of the juvenile flounder.

Materials and methods

Ten experimental diets containing different fish meals were prepared : 4 kinds of white fish meals (WFM-A, B, C and D), 3 kinds of herring fish meals (HFM-E, F and G), mackerel fish meal (MFM), WFM mixture and brown fish meals (BFM) mixture. Dietary energy and protein levels were designed to be isocaloric and isonitrogenous by adjusting the levels of fish meal, wheat flour and squid liver oil. Three replicate groups of fish (initial mean weight, 11.1 g) were hand-fed to visual satiety two times daily for 7 weeks. Filtered sea water was supplied at a flow rate of 5 l/min to each tank. The water temperature was maintained at 20.3 ± 2.61 °C.

Results and conclusion

Survival was not significantly affected by various fish meal ($P > 0.05$). The

highest weight gain ($P < 0.05$) of fish fed diets containing HFM-E, G was not significantly different from that of fish fed diets containing WFM-B and BFM mixture ($P > 0.05$). Feed efficiency and protein efficiency ratio of fish fed diets containing WFM-B, HFM-E, G, MFM and BFM mixture were significantly higher than those of fish fed other diets ($P < 0.05$). Moisture, crude protein, lipid and ash contents of whole body in fish were significantly affected by various fish meal as dietary protein sources ($P < 0.05$). The results of this study indicated that WFM-B, HFM-E, G and BFM mixture could be a appropriate for the optimal growth of juvenile flounder.

References

- Aksnes, A. and Mundheim, H., 1997. The impact of raw material freshness and processing temperature for fish meal on growth, feed efficiency and chemical composition of Atlantic halibut (*Hippoglossus hippoglossus*). *Aquaculture*, 149, 87-106.
- Anderson, J.S., Lall, S.P., Anderson, D.M. and McNiven, M.A., 1993. Evaluation of protein quality in fish meals by chemical and biological assays. *Aquaculture*, 115, 305-325.
- Lee, S-M., Park, C.S. and Bang, I.C., 2002. Dietary protein requirement of young Japanese flounder *Paralichthys olivaceus* fed isocaloric diets. *Fisheries science*, 68, 158-164.