Dietary lipid and carbohydrate interactions: implications on growth performance, feed utilization and non-specific immunity in hybrid grouper (Epinephelus fuscoguttatus ♀ × E. lanceolatus ♂)

Songlin Li, Ziqiang Li, Naisong Chen, Pengfei Jin, Jiacan Zhang

PII: S0044-8486(18)31193-1
DOI: doi:10.1016/j.aquaculture.2018.09.015
Reference: AQUA 633539

To appear in: *aquaculture*

Received date: 4 June 2018
Revised date: 8 August 2018
Accepted date: 7 September 2018

Please cite this article as: Songlin Li, Ziqiang Li, Naisong Chen, Pengfei Jin, Jiacan Zhang , Dietary lipid and carbohydrate interactions: implications on growth performance, feed utilization and non-specific immunity in hybrid grouper (Epinephelus fuscoguttatus ♀ × E. lanceolatus ♂). Aqua (2018), doi:10.1016/j.aquaculture.2018.09.015

Dietary lipid and carbohydrate interactions: implications on growth performance, feed utilization and non-specific immunity in hybrid grouper (*Epinephelus fuscoguttatus* ♀ × *E. lanceolatus* ♂)

Songlin Li[1,2,1], Ziqiang Li[1,1], Naisong Chen [1,3,4,*] nschen@shou.edu.cn, Pengfei Jin[1], Jiacan Zhang[1]

[1]National Demonstration Center on Experiment Teaching of Fisheries Science, Shanghai Ocean University, Shanghai, 201306, China.

[2]Laboratory for Marine Fisheries Science and Food Production Processes, Qingdao National Laboratory for Marine Science and Technology, 1 Wenhai Road, Qingdao 266237, China.

[3]Research Centre of the Agriculture Ministry on Environmental Ecology and Fish Nutrition, Shanghai Ocean University, Shanghai, 20136, China.

[4]Shanghai Collaborative Innovation for Aquatic Animal Genetics and Breeding, Shanghai Ocean University, Shanghai, 201306, China

[*]Corresponding author.

Abstract

The present study was conducted to explore the effects of dietary lipid, carbohydrate and their interactions on growth performance, feed utilization, body composition and non-specific immunity of hybrid grouper (*Epinephelus fuscoguttatus* ♀ × *E. lanceolatus* ♂). Nine isoproteic diets were formulated with three levels of dietary lipid (7, 10 and 13%) and carbohydrate (8, 12 and 16%) in a 3 × 3 factorial design. Triplicate groups of 30 juvenile fish (initial weight, 21.48 ± 0.24 g) were fed each of the diets twice daily to apparent satiation for 8 weeks. Results showed that a

[1] These authors contribute equally to the work.