

Effects of dietary palm oil supplements with oxidized and non-oxidized fish oil on growth performances and fatty acid compositions of Juvenile Japanese Sea Bass, *Lateolabrax Japonicus*

Abstract

The aim of the present study was to investigate the effects of replacement of fresh fish oil (FFO) by palm oil (PMO) and/or oxidized fish oil (OXF) mixed with PMO on growth performances, tissue fatty acid composition and oxidative status in juvenile Japanese sea bass. A 50-day feeding trial on Japanese sea bass (average weight 1.7 g) was conducted in triplicate groups of fish fed with seven test diets containing different level of FFO and PMO at 100%FFO (10F, a positive control), 60%FFO and 40%PMO (6F4P), 40%FFO and 60%PMO (4F6P), 100%OXF (10OF), 60%OXF and 40%PMO (6OF4P), 40%OXF and 60%PMO (4OF6P) and 100%PMO (10P, a negative control), respectively. Body weight gain (BWG), specific growth rates (SGR), feed conversion ratio (FCR), fatty acid compositions, vitamin E contents and thiobarbiturate reactive substances (TBARS) in muscles and livers were taken at the end of a trial.

Survival rates were relatively high and almost similar among all groups. There were no significant differences in BWG and SGR among 10F, 6F4P and 4F6P or 10OF, 6OF4P and 4OF6P, respectively. However, addition of OXF reduced the growth rates of fish regardless of PMO supplementation. Contents of saturates and n – 6 fatty acids in tissue increased linearly with increasing dietary PMO level. However EPA and DHA decreased gradually with higher inclusion of PMO among treatments. These results demonstrated that 50% FFO could be replaced by PMO for juvenile Japanese sea bass. Moreover, although the replacement of OXF (POV: 26 meq/kg diet) with PMO could reduce lipid peroxidation in fish intestine and muscle, it could not improve fish growth performances.