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Effect of partial replacement of fish meal by fermented rapeseed meal on growth, immune response and oxidative condition of red sea bream juvenile, *Pagrus major*

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Abstract

A 65-day feeding trial was conducted to investigate the effects of replacing fish meal with yeast fermented rapeseed meal (FRM) on growth performance, feed utilization, innate immune responses and oxidative stress of red sea bream juvenile, *Pagrus major*. Triplicate groups of fish received five isonitrogenous and isocaloric diets where fish meal was replaced with FRM at 0% (FRM0), 18.75% (FRM1), 37.5% (FRM2), 56.25% (FRM3) and 75% (FRM4), respectively. The results indicated that there were no differences in final body weight, weight gain, specific growth rate and feed intake among all groups when compared to fish fed the control diet (FRM0) except for those fed the FRM4 diet, which showed reductions ($P < 0.05$). Furthermore, feed conversion ratio, protein efficiency ratio and survival were not affected by the test diets. At the end of the trial, dietary treatments had no significant influence ($P > 0.05$) on whole body ash, lipid contents, body somatic indices or gut protease activity. Highest levels of fermented rapeseed meal (FRM3 and FRM4 diets) significantly decreased ($P < 0.05$) whole body protein content. The animals fed FRM4 returned decreased ($P < 0.05$) dry matter compared with the control group. Blood hematocrit level decreased progressively among dietary treatments with only the FRM4 fed group showing differences

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