

Garlic (*Allium sativum*) Extract Enhancing Protein Digestive Enzymes and Growth Performance in Marble Goby (*Oxyleotris marmorata*) Juvenile

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Abstract : Low survival rate has being particular problem in nursery of marble goby juvenile. The aim of this study was to investigate effect of garlic extract on protein digestive pancreatic enzymes, trypsin (T) and chymotrypsin (C). The marble goby were reared with commercial feed mixed garlic extract at concentration of 0 (control), 0.3, 0.5, 1.0, 3.0 and 5.0% (w/w) for 6 weeks. Analysis of the digestive enzymes at 2 and 6 weeks was performed. Growth parameters; weight gain (WG), specific growth rate (SGR) and feed efficiency (FE), were identified. For T, C and T/C at 2 weeks, values of T and T/C ratio of 0.3% (w/w) group showed significant difference ($p < 0.05$) with the highest values of 17685.64 ± 11981.77 U/mg protein and of 51.64 ± 27.46 U/mg protein, respectively. For C at 2 weeks, 0% (w/w) group showed the highest values of 16191.76 ± 2225.56 U/mg protein. Whereas value of T, C and T/C ratio at 6 weeks, there was no significant difference ($p > 0.05$). For growth performance, it significantly increased in all garlic extract fed groups (0.3-5.0%, w/w), both at 2 and 6 weeks. At 2 weeks, values of WG and SGR of 0.5% (w/w) group showed the highest values of $71.51 \pm 1.60\%$, and $3.85 \pm 0.07\%$, respectively. For FE, 0.3% (w/w) group showed the highest value of $60.21 \pm 6.51\%$. At 6 weeks, it illustrated that all growth parameters of 5.0% (w/w) group were the highest values; WG = $35.06 \pm 5.66\%$, SGR = $2.14 \pm 0.30\%$, and FE = $5.86 \pm 0.68\%$. We suggested that garlic extract could be available for protein digestive enzyme and growth enhancement in marble goby nursery with artificial feed. This result will be high benefit for commercial aquaculture of marble goby.

Keywords : marble goby, nursery, garlic extract, digestive enzyme, growth

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