Abstract

This study investigated the effects of combined ginger (Zingiber officinale) and lemongrass (Cymbopogon citratus) extracts as phytobiotics on the growth performance and survival rate of Nile tilapia (Oreochromis niloticus). The experiment was conducted at the Aquaculture Laboratory of Universitas Muhammadiyah Gorontalo over 30 days using a Completely Randomized Design (CRD) with four treatments and three replications: P1 (control, no extract), P2 (ginger extract at 5.63 g/kg feed), P3 (lemongrass extract at 5.63 g/kg feed), and P4 (combination of ginger extract 2.8 g/kg and lemongrass extract 2.8 g/kg feed). Measured parameters included length growth, absolute weight gain, survival rate (SR), and water quality (temperature, pH, and dissolved oxygen/DO). The administration of combined ginger and lemongrass extracts significantly increased ($p < 0.05$) the length growth of Nile tilapia, while no significant difference was observed in weight gain. The combination treatment (P4) resulted in the highest average length growth (5.25 cm) and an absolute weight gain of 1.00 g. The highest survival rate was observed in the lemongrass extract treatment (P3) at 89%, whereas the control group exhibited the lowest survival rate at 75.57%. Water quality parameters remained within optimal ranges throughout the study, with temperatures of 25–30°C, pH values of 6–7, and dissolved oxygen levels of 5–6 mg/L.The observed improvements in growth performance and survival rate under the combination treatment are likely attributable to the synergistic effects of bioactive compounds, including gingerol, shogaol, and citral. These compounds may stimulate growth hormones (GH–IGF axis), enhance digestive enzyme activity, reduce oxidative stress, and inhibit pathogenic bacterial activity. Consequently, the combination of ginger and lemongrass extracts is recommended as a natural phytobiotic alternative to promote healthy and sustainable Nile tilapia aquaculture.

Keywords: *phytobiotics; Nile tilapia; ginger; survival rate; growth; lemongrass*