The effect of dietary yeast cell wall (Saccharomyces cerevisiae) and cinnamon essential oil (Cinnamomum verum) supplementation on growth indices, blood biochemistry and innate immunity of rainbow trout (Oncorhynchus mykiss) fingerlings

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Abstract:
The effect of dietary yeast cell wall (Saccharomyces cerevisiae) and cinnamon essential oil (Cinnamomum verum) supplementation on growth indices, serum biochemical parameters and immunity of rainbow trout fingerlings was evaluated. Using a 2×2 factorial experiment, 276 fingerlings (9.67±1.20 g) were fed four experimental diets (including control diet, diet supplemented with 1.5% yeast cell wall or 1% cinnamon essential oil, and a diet containing 1.5% yeast cell wall and 1% cinnamon essential oil) for 60-days. Results indicated that the specific growth rate and weight gain significantly decreased in fish fed diet supplemented with 1% cinnamon essential oil (p<0.05), but feed conversion ratio didn’t differ among treatments (p>0.05). Fish fed diets containing 1% cinnamon essential oil had the highest hepatosomatic index (p<0.05). The highest RBC count and blood hemoglobin content belonged to group fed diet containing 1% cinnamon essential oil (p<0.05). Simultaneous feeding with yeast cell wall and cinnamon essential oil significantly resulted in higher hematocrit value. Serum alkaline phosphatase activity was significantly increased in group fed diet containing 1.5% yeast cell wall. Dietary cinnamon essential oil supplementation also resulted in lower alkaline phosphatase, aspartate aminotransferase and gamma glutamyltransferase activity of serum (p<0.05). The highest serum total protein and globulin content and lysozyme activity were observed in fish fed diet only supplemented with yeast cell wall (p<0.05). In conclusion, dietary cinnamon essential oil and yeast cell wall inclusion resulted in improved immunity of rainbow trout fingerlings.

Keywords: Yeast cell wall, Cinnamon essential oil, Serum biochemistry, Immunity, Rainbow trout.