

Effect of vitamin C and β ,1-3,1-6 glucan on the growth of ornamental fish swordtail, *Xiphophorus helleri*

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Abstract

Xiphophorus helleri (swordtail fish) is a popular ornamental fish which is bred, reared and sold for export and local markets. The present study was carried out to investigate whether vitamin C and β ,1-3,1-6 glucan offered with food will increase the growth performances of swordtail fish. Four types of feed (A,B,C,D) were formulated by adding 0.03% and 0.3% extra vitamin C to Feed B and Feed C respectively while 1% β , 1-3,1-6 glucan was incorporated to the Feed D. Feed A without extra vitamin C or glucan was the control diet. Four groups of acclimated swordtail fingerlings were daily fed with the four types of feed, at 5% of their body weight separately over a period of 45 days. A random sample containing 10 fish from each replicate was obtained weekly and the wet body weight and standard length were recorded; these data were then employed in assessing the growth performances of fish under different feeding treatments.

Mean percentage specific growth rate (%SGR), mean percentage average daily growth (%ADG) and mean percentage weight gain (%WG) for the fish fed with Feed C (0.3% vitamin C), recorded at weekly intervals, were significantly higher ($p < 0.05$) than that of the fish fed with the Feed B (0.03% vitamin C) and Feed A. Mean percentages of SGR, ADG and WG were significantly higher ($p < 0.05$) in fish fed with Feed C compared to the fish fed with Feed B. There was no significant difference in mean percentage condition factor (CF; recorded weekly) of fish fed with diets containing both levels of vitamin C and the control diet. However, at the termination of the experiment mean %CF recorded for Feed C was significantly higher than that was recorded for Feed A. At the termination of the experiment also fish fed with Feed C had significantly higher mean percentages of SGR, ADG and WG compared to the fish fed with Feed B and Feed A. There were no significant differences in mean percentages of SGR, ADG, WG and CF of fish fed with the diet containing glucan and control diet throughout the experimental period as well as at the termination of the experiment ($p > 0.05$). Results show that vitamin C has a significant effect on growth performances of swordtail fish while β , 1-3, 1-6 glucan has no significant effect on growth of swordtail fingerlings. Growth performance of fish fed with 0.3% vitamin C was better than the fish fed with 0.03% vitamin C.