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Effect of almond-based diet, on the growth performance and selected hematological parameters of Nile tilapia (*Oreochromis niloticus*) fingerlings

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The inconsistency in supply, and high prices pose constraints on the utilization of fish meal, as the protein source, in the process of fish feed preparation. Therefore, it is crucial to identify cost-effective alternative protein sources for fish feed formulation in aquaculture to overcome these limitations. To address this issue, tropical almond kernel meal has been identified as one of the alternative protein sources for replacing fish meal in the process. In the current investigation, four experimental meals i.e., Diet 1: prepared feed with 0% tropical almond kernel meal (TAM) (control feed), Diet 2, 3, and 4 replaced fish meal with TAM at 10%, 30%, and 50%, respectively, were used. Additionally, Diet 5 which was purchased commercially was also used as the second control feed. Effects of these replacements of fish meal with TAM were assessed by feeding these five experimental feeds separately to five treatments of all male Nile tilapia (*Oreochromis niloticus*) fingerlings, each with three replicates, and evaluated the growth performances, survival, and selected haematological parameters; total erythrocyte count, haemoglobin count, differential leucocyte count, and haematocrit calculation under laboratory conditions. Experimental feeds processed with TAM diets (Diet 2, Diet 3, Diet 4) contributed to the growth performances, survival, and haematological parameters of Nile tilapia fingerlings, and the results were significantly different (One-way ANOVA, $P < 0.05$) from those of two control feeds (Diet 1 and Diet 5). The highest mean percentage weight gain (316.8 ± 35.0), mean specific growth rate (2.036 ± 0.12), and mean average daily growth (4.526 ± 0.49), was achieved by the Diet 3 (30% TAM) when compared to other treatments. However, there was no significant difference in the mean percentage survival rate for five experimental diets. When considering feed conversion ratio, the lowest feed conversion ratio (FCR) (1.210 ± 0.05) and the highest mean feed efficiency ratio (FER) values (0.827 ± 0.03) were obtained from Diet 3 feed fed treatment. The highest FCR (2.675 ± 0.04) value was obtained from the Diet 5 feed fed treatment. Among the various dietary options, Diet 3 fed fish displayed the highest values for red blood cells (RBCs) at $3.173 \times 10^6 \text{ mm}^{-3}$ and hemoglobin (Hb) at 11.225 g/dL. These values were significantly different ($P < 0.05$) from those values observed for the other experimental diets tested. The findings suggest that incorporating 30% tropical almond kernel meal into the fish feed as their diet can have a positive impact on both RBC count and Hb levels in *O. niloticus* fingerlings. The outcome of this study suggests that there is a definite potential for tropical almond kernel meal as a beneficial dietary component for enhancing blood parameters as well as growth parameters in *O. niloticus*. Further exploration is highly motivated due to the positive impact of the results.

Keywords: Haematology, Growth rate, *Oreochromis niloticus*, Replacement, *Terminalia catappa*

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