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The Effects of Feeding the African Catfish, Clarias gariepinus with Fermented Sweet Potato (Ipomoea batatas Lam) Peels on Growth, Nutrient Utilization and Some Physiological Responses

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Abstract : This study examined the growth, nutrient utilization, hematology, and enzyme activities of the African catfish, Clarias gariepinus, juveniles (mean weight 27.69 ±0.51g) fed diets with varying levels of fermented sweet potato (Ipomoea batatas Lam) peels (SPP), for a period of 10 weeks, in the laboratory. Five iso-caloric and iso-nitrogenous diets were formulated containing 0% (control diet), 25%, 50%, 75% and 100% SPP-maize replacements tagged diets D0, D25, D50, D75 and D100 respectively. The crude protein content of the test diets ranged from 39.04%-39.92% and crude fibre, 10.52%-11.51%. The growth response of the fish fed the four experimental diets compared favourably with the control diet, as significantly (P>0.05) higher values were observed for Mean Final Weight, Mean Weight Gain, Specific Growth Rate, Food Conversion Ratio, Protein Efficiency Ratio and Net Protein Utilization. However, fish fed diets D50 and D75 demonstrated superior growth. Carcass of fish fed experimental diets also indicated significantly higher (p>0.05) protein and lipid content compared to the initial and fish fed control diet. There was an increase in the white blood cells (WBC) and the lymphocytes as the SPP increased in the diet. The results obtained for mean corpuscular hemoglobin concentration (MCHC), mean corpuscular hemoglobin (MCH) and mean cell volume (MCV) showed that the fish fed the diet containing 75% SPP had significantly higher (p>0.05) values of MCH (48.00 pg) and MCV (155.00 fl) than the other diets. The lipase activity of the fish fed the 100% SPP meal (0.81U/mg) was significantly higher (p>0.05) than the other diets. These results show that Clarias gariepinus could tolerate up to 75% level of inclusion of fermented sweet potato peel in the diet without any deleterious effect on growth, nutrient utilization, hematological responses and enzymatic activities. Fermented sweet potato peels can conveniently replace conventional energy sources and this could become a means of recycling massive potato peel wastes being generated daily.

Keywords : hematology, fermentation, carcass, growth, African catfish
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