Chlorella vulgaris MEAL AS PROTEIN SOURCE IN THE DIETS OF AFRICAN CATFISH _Clarias gariepinus_

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Abstract

Plant proteins used as fishmeal substitute in aquafeed are usually lacking in some essential amino acids and fatty acids. Micro algae *Chlorella vulgaris* has good quality protein with the amino acid rich in methionine, lysine and alanine. Four novel diets having *C.vulgaris* as main source of protein was produced for African catfish of initial average weight 1.09 ± 0.05g. The diets were labelled a Feed 1 (F1) to feed 4 (F4). The *C. vulgaris* meal inclusion levels of the diets were for F1, 25%, F2,15%, F3, 5% and F4, 0%. The basal ingredients of the feed were corn (maize) included as F1, 40%, F2, 43% and F3, 53% and F4, 43; and millet meal varied F1 as 23%, F2, 30%, F3, 30% and F4 30%.The ingredients were preconditioned at 110 °C and pelleted. Post fingerling African catfish were stocked at 10 fish per aquarium. There were three replicate aquarium for each feed type and the fish were fed for 60d. Specific growth rate was best for the catfish fed with 25% *C.vulgaris* diet 4.37 ± 1.01 % day^{-1} and least 2.03 ± 0.80 % day^{-1} for the 0% algal meal diet F4. The food conversion ratio (FCR) was lowest (0.73 ± 0.24) for 25% algal meal diet (F1) and highest (1.62 ± 0.43) for the 0% algal meal diet F4. Similarly catfish had average weight gain of 121.02 ± 0.04g for those fed with F1 compared to 62.50 ± 0.0g for those fed with 0% algae F4.Protein efficiency ratio was highest for the F1 fed fish (2.46 ± 0.22) and lowest for those fed F4 (2.02 ± 0.09). Hepatosomatic index was lowest for F1 fed fish (1.48 ± 0.01) and highest for catfish fed with F4 (2.50 ± 0.59). Based on the results *C.vulgaris* is a good protein source for African catfish and also can substitute fishmeal in the catfish diets.

Key words: Algae, fishmeal substitution, specific growth rate, African catfish, omega 3 fatty acids

Biography

Dr Uchechukwu D. Enyidi is a professional Aquatic Fisheries Scientist with a Doctor of Philosophy degree (PhD) in Aquatic Sciences (Fisheries and Aquaculture option) obtained from University of Jyvaskyla Finland (2012). He has featured in a number of trainings and conference in Europe. He is currently the Deputy Dean College of Natural Resources and Environmental Management (CNREM) Michael Okpara University of Agriculture Umudike Nigeria. His PhD thesis in University of Jyvaskyla Finland was on the production of feeds for African catfish *Clarias gariepinus* using plant proteins. The thesis involved use of stable isotopes of ^{13}C and ^{15}N in analysis of feed ingredients utilization, assimilation and their individual separate biomass contributions to the whole fish biomass.He is currently interested in feed development using alternative fishmeal sources like plant proteins, algae and vitamins.



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