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Growth Analysis and Innate Immune Response of Tilapia (*Oreochromis niloticus*) Fed with Synbiotic Feeds in Brackish Water

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⇑ Abstract

Abstract

This study aimed to examine the effects of adding synbiotics to feed on Nile tilapia (Oreochromis niloticus) feed conversion efficiency, growth, and innate immune response. Commercial feed was supplemented with 1% prebiotic (banana flour) and the candidate probiotic bacterium Bacillus subtilis at doses of zero (control, A); 1x105CFU/mL (B); 1x107CFU/mL (C); and 1x109CFU/mL (D). After eight weeks of feeding the Feed Conversation Ratio (FCR), Weight Gain (WG) and Specific Grow Rate (SGR) were calculated. Biochemical parameters (total erythrocytes, leukocytes, and hematocrit levels) and phagocytic activity were measured from blood samples taken at the end of the experimental period. WG (2.33-3.49g), SGR (1.29-1.61% per day) and FCR (1.05-1.17) did not differ significantly (P>0.05) between treatments. Hematocrit and erythrocyte levels were highest under the control treatment (without probiotics). Hemoglobin (Hb) was highest under treatment B (7.76mg/mL) on day 35; Mean Corpuscular Volume (MCV) (229.35µm3) and Mean Corpuscular Hemoglobin (MCH) (56.12pg) were highest on day 28, while Mean Corpuscular Hemoglobin Concentration (MCHC) increased over the observation period. The phagocytic index increased under probiotic-enriched feed treatments, indicating that these probiotics could improve leukocyte performance with respect to the phagocytosis of incoming antigens.

Keywords: Bacillus subtilis., Growth, Synbiotic, Tilapia