

Abstract

Recent evidence suggests that supplementation of vital components, such as vitamins and minerals can be added to practical fish feeds to yield desirable result in the aquaculture sector. The current study has been designed to investigate the effect of dietary vitamin E₂ and copper nanoparticle (CuNPs) supplements on growth, body indices, antioxidant status, fatty acid and amino acid content in tilapia. Four isonitrogenous (crude protein 35.35 %) and isolipidic (crude fat 7.47 %) diets were formulated. Treatments were designed as T I (VE 0, CuNPs 0), T II (VE 0, CuNPs 2 mg kg⁻¹), T III (VE 500 mg kg⁻¹, CuNPs 0) and T IV (VE 500 mg kg⁻¹, CuNPs 2 mg kg⁻¹) and applied in triplicates for eight weeks. Fish (average initial weight 11.44 g) were stocked at 12 fingerlings/aquarium and fed at the rate of 5% live wet weight day⁻¹. At the completion of feeding trial, growth performance was determined by weighing each treatment individually. Significant ($p < 0.05$) increase was observed in growth in terms of final weight (g), average weight gain (g) and weight gain % in supplemented groups. Whereas, maximum increase was recorded in T IV. Similarly, significantly ($p < 0.05$) improved FCR was also observed in the same treatment. Maximum survival rate was observed in fish fed on T III and T IV. Significantly ($p < 0.05$) increased activities of catalase and peroxidase was calculated in group II. Also, fatty acid content was significantly different in T IV than other supplemented groups. However, amino acid content of fish muscle did not show any effect due to supplementation. It was found that supplementation of diet with 500 mg kg⁻¹ of vitamin E and 2 mg kg⁻¹ of CuNPs could reduce oxidative stress and improve the growth performance and health profile of tilapia.