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REPLACEMENT OF FISH MEAL BY COTTONSEED MEAL SUPPLEMENTED WITH VITAMIN E IN DIETS OF NILE TILAPIA (*OREOCHROMIS NILOTICUS*)

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ABSTRACT

The present experiment was conducted to evaluate the effect of α-tocopherol as an antioxidant for avoiding the side effects of incorporation of cottonseed meal (CSM) in the diets of Nile tilapia as a replacer of fish meal (FM). Two diets were prepared, the first one contained fish meal and considered as control, in the second diet FM protein was completely replaced by CSM. The second diet was divided into ten parts, the first one served as control and the other 9 diets were enriched by increasing levels of vitamin E (1, 5, 10, 15, 20, 25, 30, 35 and 40 times of gossypol in CSM). Each aquarium was stocked with 25 fry. The experimental fish fed the diets for 90 days. Results can be summarized as follows:

- The highest average body weight (9.91 g) was recorded by the control group fed the basal diet (contained FM) and the lowest BW (5.66 g) was obtained for fish fed diet D2 in which FM was completely replaced by CSM without vitamin E supplementation. Incorporation of vitamin E in the experimental diets significantly improved the BW. Similar trend was observed for the other growth performance parameters, body length (BL), weight gain (WG) and specific growth rate (SGR).
- The best FCR was recorded for fish group fed diets D1 and D3 which were significantly different from FCR recorded for the other treatments. The worst FCR was recorded in fish group fed diet D2 in which FM was completely replaced by CSM without addition of vitamin E. Incorporation of vitamin E in the experimental diets improved FCR specially fish group fed diet D3.
- Protein content of the whole fish body ranged between 41.33 and 50.97% and the differences were significant. Fat content of fish fed diet D2 was significantly higher than those obtained for fish fed the other groups. Compared to the two control diets D1 and D2 all vitamin levels in the experimental diets increased ash content of the fish whole body and the graded levels of vitamin E in the diets significantly altered the ash content of tilapia fish.
- The highest values for hematocrite (Ht) and haemoglobin (Hb) were obtained for fish fed the control diet (D1). Incorporation of vitamin E in the experimental diets at increasing levels significantly affected Hb and Ht. Compared to control group (Diet1), AST and ALT levels were significantly increased for fish groups fed the other supplemented experimental diets.

INTRODUCTION

The high cost of fish meal in tilapia diets warrants the potential use of cottonseed meal (CSM) as an alternative source of high quality protein. Cottonseed, *Gossypium hirsute* Linnaeus, is the third leading legume seed by weight (after soybean and rapeseed) used worldwide. Owing to its high protein value for human consumption (Alford *et al.*, 1996) and animals, as well as low market price in comparison with other legumes and