Effects of dietary pH and acid source on growth and feed efficiency of the Nile Tilapia, *Oreochromis niloticus* fry

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ABSTRACT

Two feeding trials were conducted to investigate the effects of dietary pH (pH 2.5, 3.7, 4.6, 5.7-control, pH 7.0, and pH 8.0) and dietary acid source (acetic acid, citric acid, hydrochloric acid and control-no acid) on growth rate and feed utilization efficiency of the Nile tilapia fry. In addition, attractability of the diets at different pH and dietary acid sources were determined. Results of the first feeding trial showed that the feed with pH adjusted to 4.6 resulted in significantly highest final average body weight (FABW), weight gain (WG), specific growth rate (SGR), protein efficiency ratio (PER) and most efficient food conversion ratio (FCR) in the Nile tilapia fry. Survival was 100% in diets with pH 3.7 up to 7.0; the diet with pH 2.5 exhibited significantly lowest survival followed by the pH 8.0 diet. In the second feeding trial, diets that contained hydrochloric, citric or acetic acids that were used to adjust the pH to the optimal 4.6 resulted in higher FABW, WG, SGR, and PER values but lower FCR values than did the control diet; these parameters were not significantly different among the dietary groups. This study demonstrated that the dietary pH promoted growth and efficiency in the Nile tilapia fry and that the three acids that were used were similar in their effects on growth and efficiency. Furthermore, it was demonstrated that either acidifying the diet to pH 4.6 by an inorganic acid such as HCl or the provision of a dietary acidifier such as citric acid or acetic acid could enhance growth, feed efficiency and survival of the Nile tilapia.