

Effective Sex Reversal of Nile Tilapia (*Oreochromis niloticus*) using Oral Administration of 17- α -Methyltestosterone in Different Concentrations

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Abstract

In Tilapia farming, early reproduction and slow growth of females pose significant challenges. Various methods exist for achieving this, aiming to address the aforementioned constraints in Tilapia farming by ensuring a predominance of faster-growing male fish. The research aimed to enhance sex reversal efficiency in Tilapia by elevating hormone concentration and altering feeding duration. Three-day-old Tilapia fry was fed 17- α -methyltestosterone mixed feed at 90mg/kg and 120mg/kg concentrations for 20 and 30 days. Four treatments were implemented, each with three replicates. Sex reversal percentages and growth parameters were assessed and compared using ANOVA with Minitab Version 18.0, providing insights into optimizing hormonal sex reversal techniques for Tilapia farming. The experiment of 120mg/kg feed fed for 30 days produced significantly higher males (94.99 \pm 1.67%, $p < 0.05$, ANOVA) and showed significantly lower growth rates (28.42 \pm 0.18g weight and 9.67 \pm 0.01 cm total length at 90 days of age) than other treatments. Therefore, by considering the growth parameters (32.37 \pm 0.01g weight, 11.90 \pm 0.03cm total length at 90 days of age) and sex reversal efficiencies (93.33 \pm 0.01%), the experiment of 120mg/kg feed fed 20 days was selected as the best concentration for sex reversal in Tilapia. Although this experiment did not achieve complete sex reversal, it improved the sex reversal percentages compared to past studies. Also, feeding only for 20 days with 120mg/kg reduces the environmental impacts of hormone accumulation in the environment compared to 30 days of feeding which is currently in use.

Keywords: 17- α -Methyltestosterone, Mono-sex Culture, Oral Administration, Tilapia