

Production of all male tilapia (*Oreochromis niloticus*) by immersing eggs in 17- α -methyltestosterone

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Abstract

Tilapia referred to as the ‘aquatic chicken’ is a popular freshwater species. Tilapia quickly gained popularity among fish farmers due to its rapid growth rate and tolerance to a wide range of environmental conditions. The major problems linked with Nile tilapia (*Oreochromis niloticus*) in aquaculture are early reproduction and slow-growing females in the progeny. To solve this problem, production of all male tilapia in Sri Lanka was carried out by oral administration of 17-methyltestosterone (MT) mixed with feed. However, this strategy is very harmful to the environment. Therefore, this study sought to determine the efficiency of egg immersion in an androgen solution, find out the most effective MT concentration for producing sex-reversed tilapia as an alternative to oral administration, and determine the cost-effectiveness of the egg immersion method. Stage III eggs were immersed at concentrations of 1.2 mg/L and 1.5 mg/L of MT for 72 hours and 96 hours. The hatchability and survival rate, growth parameters, the proportion of males and females and cost factors were determined as components of the research. Immersing eggs in 1.5 mg/L for 96 hours resulted in the significantly highest percentage of male Nile tilapia, with 95.00% of fish being male ($p < 0.05$, ANOVA) and at a comparatively cost-effective. Literature suggests that oral administration results in greater environmental impacts due to the accumulation of hormones in water bodies. This study demonstrates the feasibility of this method and highlights its potential to be more cost-effective compared to traditional oral delivery techniques while reducing environmental impact.

Keywords: *All-male tilapia, 17- α -methyl testosterone, Egg immersion, Sex reversal*