

The effect of methyltestosterone (MT) on sex differentiation and growth in juvenile yellow perch (*Perca flavescens*)

ABSTRACT

A study was conducted to evaluate the gonad differentiation of juvenile yellow perch (YP, *Perca flavescens*) and determine the latest labile period related to hormone treatment. Juvenile fish were subjected to two dietary concentrations of methyltestosterone (MT; 20 and 50 mg/kg feed) for 60 days in three (3) age groups of 38-, 46-, and 67-days post-hatching (dph), where control group were fed with standard commercial feed. Following a 10-month on-growing period, sex phenotypes were determined by gross and histological gonad morphology. Results showed the juvenile YP responded to the exogenous hormone when it was applied at 38 dph for both 20 and 50 mg/kg feed resulting in 100% males. At 46 dph, only 50 mg/kg feed resulted in 100% males. Both MT-treated at 38 and 46 dph significantly differed ($P < 0.01$) from the expected normal population of male:female (1:1). MT-treated at 67 dph resulted in 37% and 25% intersex fish for both 20 and 50 mg/kg feed dosage groups, respectively. MT-treated at 38 and 46 dph promoted growth and showed significantly heavier mean body weight ($P < 0.05$) compared to control. The gonadosomatic index (GSI) of MT-treated at 38 and 46 dph was significantly lower than that in control. This study provides the first evidence that juvenile YP can be successfully masculinized when the treatment is initiated at the age of up to 46 dph. The result is important for sex control in aquaculture.