

**TOLERANSI SALINITAS, PERTUMBUHAN
DAN RESPON FISILOGIS NILA MERAH (*Oreochromis sp.*)
HASIL PERSILANGAN BERBAGAI STRAIN**

INTISARI

Nila merah merupakan nila hasil persilangan yang memiliki toleransi terhadap salinitas cukup besar. Kemampuan toleransi salinitas setiap jenis nila berbeda-beda. Tujuan penelitian ini untuk mengetahui kombinasi nila merah hasil persilangan berbagai *strain* yang memiliki toleransi salinitas tertinggi, mengetahui toleransi salinitas nila merah populasi TOP hasil persilangan berbagai *strain*, mengetahui pertumbuhan dan respon fisiologis nila merah populasi TOP hasil persilangan berbagai *strain* pada media bersalinitas dan mengetahui salinitas optimal yang mendukung pertumbuhan tertinggi nila merah populasi TOP hasil persilangan berbagai *strain*. Strain nila merah yang digunakan berasal dari Cangkring (CK), Sukabumi (SB), Sukamandi (SM), dan Janti (JT). Uji toleransi salinitas menggunakan berdasarkan indikator *Median Lethal Salinity-96 Hours* (MLS-96), *Mean Survival Time* (MST), dan *Median Survival Time* (ST50). Sebelum uji toleransi salinitas MLS-96 dilakukan uji pendahuluan. Perlakuan pada uji pendahuluan diantaranya adalah 10, 20 dan 30 ppt. Uji toleransi salinitas MLS-96 menggunakan rentang salinitas yang didapatkan berdasarkan uji pendahuluan. Pertumbuhan diamati selama pemeliharaan 90 hari, meliputi laju pertumbuhan berat spesifik (*Specific Growth Rate*/SGR), rasio konversi pakan (*Feed Conversion Ratio*/FCR), dan sintasan (*Survival Rate*/SR). Respon fisiologis didapatkan saat panen, meliputi osmoregulasi dan tingkat stres. Pemeliharaan menggunakan Rancangan Acak Lengkap di ember dengan volume air 45L dengan 4 perlakuan salinitas (0, 10, 20 dan 30 ppt) dan masing-masing terdiri dari 3 ulangan. Nila merah berukuran 30-40 g yang dipelihara, diaklimatisasi terlebih dahulu hingga mencapai salinitas yang diinginkan. Kenaikan salinitas (aklimatisasi) perhari yaitu 3 ppt. Pakan diberikan 2 kali/hari sebanyak 3% dari biomassa. Setiap ember diberi aerasi dan dilakukan pergantian air sebanyak 50%/minggu. Aktivitas osmoregulasi didapatkan dari gradien tekanan osmotik media dan darah. Tingkat stres didapatkan dari pengukuran kadar glukosa darah ikan. Hasil pengujian menunjukkan bahwa nila merah SMCK (betina Sukamandi x jantan Cangkring) memiliki toleransi salinitas tertinggi berdasarkan indikator MLS-96 adalah 12,2 ppt, MST adalah 34,4 jam, dan ST50 adalah 33 jam. Toleransi salinitas nila merah populasi TOP hasil persilangan berbagai *strain* berdasarkan indikator MLS-96 adalah 9,4 ppt, MST adalah 26,7 jam, dan ST50 adalah 14,6 jam. Nila merah populasi TOP hasil persilangan berbagai *strain* dengan SGR tertinggi sebesar 0,65%/hari dan FCR terendah yaitu 1,47 diperoleh pada salinitas 10 ppt. Respon fisiologis nila merah pada salinitas tersebut mempunyai gradien tekanan osmotik media dan darah paling kecil dan ikan tidak dalam keadaan stres. Pertumbuhan nila merah populasi TOP hasil persilangan berbagai strain berdasarkan SGR tertinggi adalah 0,68%/hari dan FCR terendah 1,41 pada salinitas optimal 13,2 ppt.

Kata kunci: Nila merah; pertumbuhan; respon fisiologis; toleransi salinitas,

**SALINITY TOLERANCE, GROWTH AND
PHYSIOLOGICAL RESPONSES RED TILAPIA (*Oreochromis sp.*)
RESULT OF CROSSING VARIOUS STRAINS**

ABSTRACT

Red tilapia is a crossbred tilapia that has a high tolerance to salinity. The salinity tolerance ability of each type of tilapia is different. The purpose of this study was to determine the combination of red tilapia crossed with various strains that have the highest salinity tolerance, determine the salinity tolerance of red tilapia TOP population crossed with various strains, determine the growth and physiological response of red tilapia TOP population crossed with various strains on salinity media and determine the optimal salinity that supports the highest growth of red tilapia TOP population crossed with various strains. The red tilapia strains used were from Cangkringan (CK), Sukabumi (SB), Sukamandi (SM), and Janti (JT). The salinity tolerance test was based on the Median Lethal Salinity-96 Hours (MLS-96), Mean Survival Time (MST), and Median Survival Time (ST50) indicators. Before the MLS-96 salinity tolerance test, a preliminary test was conducted. Treatments in the preliminary test include 10, 20 and 30 ppt. The MLS-96 salinity tolerance test uses the salinity range obtained based on preliminary tests. Growth was observed during 90 days of rearing, including Specific Growth Rate (SGR), Feed Conversion Ratio (FCR), and Survival Rate (SR). Physiological responses were obtained at harvest, including osmoregulation and stress levels. Maintenance used a completely randomized design in a bucket with a water volume of 45L with 4 salinity treatments (0, 10, 20 and 30 ppt) and each consisting of 3 replicates. The 30-40 g red tilapia reared were first acclimatized to the desired salinity. Salinity increase (acclimatization) per day is 3 ppt. Feed was given twice/day as much as 3% of the biomass. Each bucket was aerated and water was changed 50%/week. Osmoregulatory activity was obtained from the osmotic pressure gradient of the media and blood. Stress levels were obtained from the measurement of fish blood glucose levels. The test results showed that SMCK red tilapia (Sukamandi female x Cangkringan male) had the highest salinity tolerance based on MLS-96 indicator of 12.2 ppt, MST was 34.4 hours, and ST50 was 33 hours. Salinity tolerance of red tilapia TOP population resulting from crossing various strains based on MLS-96 indicator was 9.4 ppt, MST was 26.7 hours, and ST50 was 14.6 hours. The TOP population of red tilapia crossed with various strains with the highest SGR of 0.65%/day and the lowest FCR of 1.47 was obtained at 10 ppt salinity. The physiological response of red tilapia at this salinity has the smallest media and blood osmotic pressure gradient and the fish are not in a stressful state. The growth of TOP population red tilapia crossed with various strains based on the highest SGR was 0.68%/day and the lowest FCR was 1.41 at the optimal salinity of 13.2 ppt.

Keywords: Red tilapia; growth; physiological response; salinity tolerance