

**KONSENTRASI AMONIA DAN SINTASAN
NILA MERAH (*Oreochromis sp.*) DALAM SISTEM RESIRKULASI
MENGGUNAKAN METODE *MOVING BED BIOFILM REACTOR***

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INTISARI

Penelitian ini dilakukan untuk mengetahui efektivitas penggunaan kaldness dalam metode filtrasi *Moving Bed Biofilm Reactor* (MBBR) dalam mengurangi kadar amonia dalam air dan mempertahankan sintasan pemeliharaan nila merah dalam sistem resirkulasi. Penelitian ini dilaksanakan selama 2 bulan yaitu pada bulan September hingga November 2020 di Laboratorium Riset, Departemen Perikanan, Fakultas Pertanian, Universitas Gadjah Mada. Penelitian ini dilakukan dengan metode eksperimental menggunakan Rancangan Acak Lengkap (RAL). Perlakuan yang diterapkan pada penelitian ini yaitu kontrol (tanpa penambahan kaldness) serta pemberian kaldness sebesar 5 %, 10 %, dan 15 % dari total volume reaktor filtrasi dengan pengulangan pada masing – masing perlakuan sebanyak tiga kali. Parameter yang diamati yaitu tingkat sintasan ikan yang dipantau setiap hari, pertumbuhan ikan yang diukur setiap dua minggu sekali dan kualitas air yang meliputi suhu, padatan total terlarut (*Total Dissolved Solid/TDS*), derajat keasaman, oksigen terlarut, dan konsentrasi amonia dalam air yang diamati pada masa awal, tengah dan akhir penelitian. Data kualitas air, pertumbuhan, dan sintasan diuji dengan analisis sidik ragam (*Analysis of Varians/ANOVA*) dan apabila antar perlakuan terdapat perbedaan nyata ($P < 0.05$) dilanjutkan dengan analisis *Duncan's Multiple Range Test*. Hasil menunjukkan bahwa kandungan amonia terlarut dan tingkat kelulushidupan pada perlakuan dengan penambahan kaldness terbukti lebih rendah dibandingkan dengan perlakuan tanpa kaldness dengan nilai rata – rata terendah terdapat pada perlakuan penambahan kaldness sebanyak 15 % dari volume reaktor dengan nilai amonia rata – rata sebesar 0,0628 mg/L dan sintasan nila tertinggi terdapat pada perlakuan penambahan kaldness sebanyak 10 % dari volume reaktor yaitu dengan nilai 84,67 %.

Kata kunci: amonia, filtrasi, kaldness, nila merah, resirkulasi.

Ammonia Concentration and Survival Rate of Red Tilapia (*Oreochromis sp.*) in Recirculating Aquaculture System using Moving Bed Biofilm Reactor Method

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Abstract

This research was aimed to determine the effectiveness on the use of kaldness in the Moving Bed Biofilm Reactor (MBBR) filtration method in reducing ammonia levels in water and maintaining the survival rate of red tilapia in the recirculation system. This research was completed within 2 months, from September until November 2020 at the Research Laboratory, Department of Fisheries, Faculty of Agriculture, Universitas Gadjah Mada. This research was conducted through experimental method by using a Complete Randomized Design (CRD). The treatments of the experiment in this research were namely control (no kaldness added) and kaldness added in the amount of 5 %, 10 %, and 15 % from the total volume of the reactor, with repetition of each treatment three times. The parameters observed were the survival and growth rate of the fish, and the water quality. The survival rate of fishes were monitored daily and the growth of fishes were measured every two weeks. The water quality including the temperature, total dissolved solid, degree of acidity, dissolved oxygen, and concentration of ammonia dissolved were observed at the beginning, middle, and end of the research. Water quality, growth, and survival rate were tested by analysis of variance (ANOVA) and if there were significant differences between the treatments ($P < 0.05$), followed by the Duncan's Multiple Range Test analysis. This research consequently yield findings that the content of dissolved ammonia and the survival rate with the treatment by adding kaldness to the filtration reactor proved to be lower compared to the one without kaldness with the lowest average value occurred in the treatment of adding 15 % of kaldness from the reactor volume with an average ammonia level of 0,0628 mg/L. The highest nile tilapia survival rate was occurred in the treatment of adding 10 % of kaldness from the reactor volume with the value of 84,67%

Keywords : Ammonia, filtration, kaldness, recirculating aquaculture system, red tilapia.