

## Intisari

### PENGARUH PENAMBAHAN BAKTERI NITRIFIKASI *Klebsiella* sp. PADA MEDIA BUDIDAYA NILA (*Oreochromis* sp.) SISTEM RAS TERHADAP SINTASAN, PERTUMBUHAN, DAN KUALITAS AIR

Tujuan penelitian ini adalah mengetahui pengaruh pemberian bakteri nitrifikasi (*Klebsiella* sp.) isolat A2 terhadap penurunan kandungan amonia pada budidaya nila dengan sistem RAS. Penelitian ini dilaksanakan pada bulan Juli - Agustus 2022 di Laboratorium Akuakultur dan Laboratorium Kesehatan Ikan dan Lingkungan, Departemen Perikanan, Fakultas Pertanian, Universitas Gadjah Mada, Yogyakarta. Rancangan yang digunakan pada penelitian ini yaitu rancangan acak lengkap (RAL) dengan tiga perlakuan dengan 3 ulangan yaitu perlakuan Probiotik  $10^7$  sel/mL, perlakuan Probiotik  $10^6$  sel/mL, dan tanpa perlakuan probiotik (kontrol). Sembilan akuarium dirancang dengan sistem resirkulasi dengan volume media  $0,12 \text{ m}^3$ , kepadatan ikan 60 ekor/akuarium (rerata berat ikan: 3,48 g). Filter yang digunakan pada bak filter yaitu arang, jaring nelayan, dan *bioball*. Pemeliharaan ikan dilakukan selama 30 hari. Kualitas air diamati harian dan pasca inokulasi bakteri nitrifikasi. Sintasan dan pertumbuhan ikan diamati pada dua pasca inokulasi. Berdasarkan uji ANOVA, tidak terdapat hasil beda nyata pada sintasan dan pertumbuhan ikan. Hasil penelitian menunjukkan bahwa kualitas air berupa suhu, kandungan oksigen terlarut dan pH media cukup bagus. Perlakuan probiotik tidak berpengaruh nyata terhadap kelulushidupan, pertumbuhan ikan, dan kandungan amonia. Kandungan amonia berkisar 0,102-0,400 mg/L. Kandungan nitrat masih diatas 0,1 mg/L. Perlu dilakukan penelitian lanjutan yang serupa dengan penambahan bakteri anammox yang mampu melepaskan amonium ke udara sehingga siklus nitrogen dalam media budidaya dapat berjalan sehingga berakibat pada peningkatan kualitas air media budidaya.

Kata kunci: amoniak, nila, pertumbuhan, *Klebsiella* sp., kualitas air

## Abstract

### EFFECT OF ADDITIONAL NITRIFYING BACTERIUM *Klebsiella* sp. IN CULTIVATION MEDIA OF TILAPIA (*Oreochromis* sp.) RAS SYSTEM ON SURVIVAL, GROWTH, AND WATER QUALITY

This study aimed to determine the effect of nitrifying bacterium (*Klebsiella* sp.) isolate A2 on reducing ammonia content in tilapia cultivation using the RAS system. This research was conducted in July - August 2022 at the Aquaculture Laboratory and Fish Health and Environment Laboratory, Department of Fisheries, Faculty of Agriculture, Gadjah Mada University, Yogyakarta. The design used in this study was a completely randomized design (CRD) using three treatments with 3 replications:  $10^7$  cells/mL Probiotics,  $10^6$  cells/mL Probiotics, and no probiotics (control). Nine aquariums were set up with a recirculating system with a media volume of  $0.12 \text{ m}^3$ , and a density of 60 fish/aquarium (mean fish weight: 3.48 g). The filters used in the filter tanks are charcoal, fishing nets, and bio-balls. Fish rearing is carried out for 30 days. Water quality was observed daily and after the inoculation of nitrifying bacteria. Based on the ANOVA test, there were no significant differences in fish survival and growth. The results showed that the water quality in terms of temperature, dissolved oxygen content, and media pH was quite good. Probiotic treatment had no significant effect on survival, fish growth, and ammonia content. The ammonia content ranges from 0.102-0.400 mg/L. Nitrate content is still above 0.1 mg/L. It is necessary to carry out further research similar to the addition of anammox bacteria which are capable of releasing ammonium into the air so that the nitrogen cycle in the cultivation media can run increasing the water quality of the cultivation media.

Keywords: ammonia, growth, *Klebsiella* sp., tilapia, water quality