

INTISARI

ISOLASI DAN IDENTIFIKASI BAKTERI NITRIFIKASI DARI MEDIA BUDIDAYA NILA (*Oreochromis sp.*) DI KALURAHAN SINDUMARTANI KAPANEWON NGEMPLAK KABUPATEN SLEMAN

Penelitian ini bertujuan untuk mengisolasi dan mengidentifikasi bakteri nitrifikasi dari media budidaya nila di Kalurahan Sindumartani Kapanewon Ngemplak Kabupaten Sleman. Bakteri diisolasi dengan menggunakan medium nitrifikasi. Karakterisasi bakteri dilakukan dengan uji non patogen pada nila (*Oreochromis sp.*) dan uji aktivitas nitrifikasi dalam medium fermentasi bakteri tunggal selama 9 hari. Identifikasi bakteri dilakukan dengan pengamatan morfologi koloni, morfologi sel, uji biokimia, dan analisis molekuler dengan gen 16S rRNA dan gen *gyrB*. Sebanyak 15 isolat bakteri nitrifikasi berhasil diperoleh. Empat isolat non-patogen memiliki aktivitas nitrifikasi tertinggi pada hari ke-enam inkubasi dengan produksi nitrat sebesar 17,26-21,54 ppm. Dua bakteri terpilih, isolat A2 dan A3 memiliki morfologi koloni berwarna putih susu, permukaan licin, bentuk *circular*, tepi *entire*, dan elevasi *convex*. Kedua bakteri tersebut berbentuk batang pendek, bersifat Gram negatif, non-motil, menghasilkan katalase, memfermentasi glukosa, sukrosa dan laktosa, serta tidak menghasilkan oksidase, ornithin dekarboksilasi, indol, dan H₂S. Analisis molekuler menunjukkan bahwa kedua isolat memiliki kemiripan tertinggi (99,28% dan 99,34%) dengan *Klebsiella spp.*

Kata kunci: gen 16S rRNA, gen *gyrB*, *Klebsiella*, nitrifikasi

ABSTRACT

ISOLATION AND IDENTIFICATION OF NITRIFICATION BACTERIA FROM TILAPIA (*Oreochromis sp.*) POND CULTURE IN KALURAHAN SINDUMARTANI KAPANEWON NGEMPLAK SLEMAN REGENCY

This research aims to isolate and identify nitrifying bacteria from tilapia cultivation media in Kalurahan Sindumartani Kapanewon Ngemplak Sleman Regency. Bacteria were isolated using a nitrification medium. Bacterial characterization was carried out by non-pathogenic test in tilapia (*Oreochromis sp.*), and nitrification activity test in a single bacterial fermentation medium for 9 days. Bacterial identification was carried out based on the colony and cell morphologies, biochemical tests, and molecular analysis using the 16S rRNA gene and the *gyrB* gene. A total of 15 isolates of nitrifying bacteria were obtained. Four non-pathogenic isolates had the highest nitrification activity on the sixth day of incubation, with nitrate production of 17.26-21.54 ppm. Two selected bacteria, isolates A2 and A3, have colony morphology that is milky white, smooth surface, circular shape, entire edge, and convex elevation. Both bacteria are short rods, Gram negative, non-motile, produce catalase, fermenting glucose, sucrose and lactose, and do not produce oxidase, ornithin decarboxylase, indole, and H₂S. Molecular analysis showed that the two isolates had the highest similarity (99.28% and 99.34%) with *Klebsiella* spp.

Keywords: 16S rRNA gene, *gyrB* gene, *Klebsiella*, nitrification