ABSTRACT

ISOLATION AND CHARACTERIZATION OF ANOXYGENIC PHOTOSYNTHETIC BACTERIA IN THE HANURA LAMPUNG AS A CANDIDATE FOR BIOREMEDIATION AND PROBIOTIC.

By

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The purpose of this study was to determine the ability of anoxigenic photosynthetic bacteria (BFA) as candidates for bioremediation agents in reducing ammonia compounds and as candidates for probiotic agents in competition with Vibrio sp. Bacterial isolates were isolated from the Hanura Lampung mangrove forest. Bacterial isolates were characterized based on differences in pH and NaCl then decreased H2S and ammonia compounds, antibiotic activity tests and competition tests between BFA and Vibrio sp. The results of isolation and BFA characterization showed that there were 8 Gram negative isolates and 2 Gram positive isolates with stem colonies. From the results of the pH and NaCl selection test, all isolates could not grow at pH 4 but grew well at pH 7 and 10. The results of the NaCl test of all isolates could grow except B2DM isolates which could not grow at 0% NaCl concentration. In the ammonia reduction test, it was found that BFA isolate which could reduce the highest ammonia compound was L1 isolate by 62% while the lowest B2DM isolate was 12%. BFA B and L1 isolates have the ability to compete in suppressing the growth of *Vibrio* sp. in the competition test

each of 2.6 and 1.9 log ∑ cells. BFA L2 isolates are sensitive to 5 types of antibiotics including ampicillin, streptomycin, nalidixic acid, chloramphenicol and trimethoprim.

Keywords: ammonia, bioremediation agents, probiotic agents, photosynthetic bacteria anoxigenic, *Vibrio* sp.

ABSTRAK

ISOLASI DAN KARAKTERISASI BAKTERI FOTOSINTETIK ANOKSIGENIK PADA HUTAN MANGROVE HANURA LAMPUNG SEBAGAI KANDIDAT AGEN BIOREMEDIASI DAN PROBIOTIK

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Tujuan penelitian ini untuk mengetahui kemampuan bakteri fotosintetik anoksigenik (BFA) sebagai kandidat agen bioremediasi dalam menurunkan senyawa ammonia dan sebagai kandidat agen probiotik dalam kompetisi dengan bakteri *Vibrio* sp. Isolat bakteri diisolasi dari hutan mangrove Hanura Lampung. Isolat bakteri dikarakterisasi berdasarkan perbedaan pH dan NaCl, selanjutnya dilakukan uji penurunan senyawa H_2S dan ammonia, uji aktivitas antibiotik dan uji kompetisi antara BFA dan *Vibrio* sp. Hasil uji isolasi dan karakterisasi BFA didapatkan 8 isolat bersifat Gram negatif dan 2 isolat Gram positif dengan bentuk koloni batang. Dari hasil uji seleksi pH dan NaCl, seluruh isolat tidak dapat tumbuh pada pH 4 namun tumbuh baik pada pH 7 dan 10. Hasil uji NaCl semua isolat dapat tumbuh kecuali isolat B2DM yang tidak dapat tumbuh pada konsentrasi NaCl 0%. Pada uji penurunan amonia didapatkan

isolat BFA yang dapat menurunkan senyawa ammonia tertinggi adalah isolat L1 sebesar 62% sedangkan terendah isolat B2DM sebesar 12%. Isolat BFA B dan L1 memiliki kemampuan kompetisi dalam menekan pertumbuhan bakteri *Vibrio* sp. pada uji kompetisi masing-masing sebesar 2,6 dan 1,9 log ∑ sel. Isolat BFA L2 sensitif terhadap 5 jenis antibotik antara lain ampisilin, streptomisin, asam nalidiksat, kloramfenikol dan trimetoprim.

Kata kunci : Bakteri fotosintetik anoksigenik,*Vibrio* sp. agen probiotik, agen bioremediasi.