ABSTRACT

MOLECULAR CHARACTERIZATION OF LOCAL ISOLATE BACTERIA SELECTED FROM CASSAVA WASTE WITH 16S rRNA METHOD

By

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Lampung province has a number of cassava production at 7,384,084 tons. The increasing of cassava production related to the increase in cassava waste automatically. Indirectly one of the main waste of cassava industry is cassava peel. Cassava peel consists of components such as cellulose and amylum, so that, this material could be as a medium for bacterial growth such as cellulolytic and amylolytic bacteria. This research aims to characterize the molecular of local isolate bacteria that selected in cassava waste indigenously, conducted by 16S rRNA method and identify the type or species through phylogenetic analysis. The results of DNA isolation obtained DNA from cell culture of SCWB1 and SCWB17 were 33.9 ng/µl and 218 ng/µl respectively. The purity of isolated DNA was examined by comparing absorbance of λ260/280 and λ260/230. Our result show that the value of comparison for SCWB1 were 2,061 and 2,519, since for SCWB17 were 1,904 and 1,585 respectively. Amplicons appear for both of isolates had DNA fragment at ± 1500 bp. Based on BLAST analysis on NCBI and phylogenetic tree construction it was noted that SCWB1 isolates have a percent identity of 97.73% connected to Bacillus cereus strains IAM 12605 and SCWB17 isolates has a percent identity of 97.90% connected to Klebsiella variicola strains F2R9.

Keywords: Cassava waste, 16S rRNA, Bacillus cereus, Klebsiella variicola

ABSTRAK

KARAKTERISASI MOLEKULER BAKTERI ISOLAT LOKAL TERPILIH ASAL LIMBAH SINGKONG DENGAN METODE 16S rRNA

Oleh

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Provinsi Lampung memiliki angka produksi singkong sebesar 7.384.084 ton. Meningkatnya produksi singkong menyebabkan peningkatan pada jumlah limbah singkong. Limbah utama dari industri singkong adalah kulit singkong. Kulit singkong mengandung komponen seperti selulose dan amilum, sehingga dapat dijadikan suatu media bagi pertumbuhan bakteri seperti bakteri selulolitik dan amilolitik. Penelitian ini bertujuan untuk mengkarakterisasi molekuler isolat lokal terpilih asal limbah singkong indigenous yang dilakukan dengan metode 16S rRNA dan ditentukan jenis atau spesiesnya melalui analisis filogenetik. Hasil isolasi DNA menunjukkan bahwa isolat SCWB1 memiliki konsentrasi sebesar 33,9 ng/µl dan isolat SCWB17 memiliki konsentrasi sebesar 218 ng/µl. Hasil kemurnian DNA dari isolat SCWB1 adalah 2,061 pada λ260/280 dan 2,519 pada λ260/230. Sementara pada isolat SCWB17 diperoleh hasil yaitu 1,904 pada λ260/280 dan 1,585 pada λ260/230. Amplikon menunjukkan bahwa kedua isolat memiliki fragmen DNA yang berukuran ± 1500 bp. Berdasarkan analisis *BLAST* pada situs *NCBI* dan konstruksi pohon filogenetik dapat disimpulkan bahwa isolat SCWB1 memiliki nilai *percent identity* 97,73% terhadap *Bacillus cereus strain* IAM 12605 dan isolat SCWB17 memiliki nilai *percent identity* 97,90% terhadap *Klebsiella variicola strain* F2R9.

Kata kunci : Limbah singkong, 16S rRNA, *Bacillus cereus*, *Klebsiella variicola*