UNIVERSITI TEKNOLOGI MARA

DETECTION OF LIPASE GENE OF LOCAL SOIL BACTERIA ISOLATED FROM DOMESTIC WASTE SITES

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ABSTRACT

Lipases are important enzymes and known as most powerful biocatalyst in biotechnology industries. The aim of this study was to determine the lipase production from local soil isolates of domestic waste sites by using qualitative and quantitative methods, to identify the bacterial isolates that produced lipase via molecular methods and to detect the lipase gene segment from the chosen isolate with the highest lipase production. Six isolated lipase producing bacteria were selected and screened for their lipase activity. All isolates were isolated from two local domestic waste site soils at Shah Alam, Selangor namely garbage site and night market site. The four isolates from garbage site soil were labelled as F5, F5s, F5s-2 and F2, while the other two isolates from night market site soil were labelled as N4 and N8. All of them gave positive results when tested on the Rhodamine B agar plate by emitting the fluorescent orange colour that indicates the secretion of lipase. Among these isolates, N4 shows the most intense colour which indicates that there were higher lipase secretions from this isolate compared with other isolates. The result was supported by quantitative spectrophotometric assay that showed isolate N4 releasing the highest lipase activity among the others with value of 1,543.78 U/ml. After performing 16S rRNA gene amplification, two isolates out of six isolated bacteria were selected for further sequencing and were identified as *Serratia marcescens* and *Alcaligenes faecalis* for isolate N4 and isolate F5s-2 respectively. A pair of lipase gene primers of LipA gene was designed based on *Serratia marcescens* strain and the gene was successfully detected in the genomic DNA of isolate N4.

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