

UNIVERSITI TEKNOLOGI MARA

**ISOLATION AND IDENTIFICATION
OF BACTERIA FROM
PHYTOREMEDIATION PLANT OF
*Heliconia psittacorum***

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AUTHOR'S DECLARATION

I declare that the work in this dissertation was carried out in accordance with the regulations of Universiti Teknologi Mara. It is original and it is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution and non-academic institution for any degree.

I hereby, acknowledged that I have been supplied with the Academic Rules and Regulations for Undergraduates, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

The increasing of environmental damage worldwide had raised concerns to the human populations as the ability for the pollutants to degrade takes a long time which may be partially solved by the emerging phytoremediation technology. This cost-effective plant-based approach to remediation takes advantage of the remarkable ability of plants and microorganisms to concentrate elements and compounds from the environment and to metabolize various molecules in their tissues which toxic heavy metals and organic pollutants are the major targets. This study aims to analyse on the concentration of gram-positive and gram-negative bacteria and identify the bacteria using biochemical assays and commercialized API Kit. Three plant samples of *Heliconia psittacorum* were analysed for their root and soil sample which showed the concentration of gram-positive bacteria is higher compared to gram-negative bacteria which ranged from 1.9×10^8 to 3.95×10^9 , while gram-negative bacteria ranged from 2.25×10^7 to 2.95×10^9 . Based on the identification test, seven bacteria were identified. Four gram-negative bacteria which are *Enterobacter aerogenes*, *Escherichia coli*, *Pseudomonas aeruginosa* and *Chryseobacterium indologenes* which is generally bacteria that are common to the environment. Meanwhile, three gram-positive bacteria include *Staphylococcus aureus*, *Staphylococcus xylosus* and *Staphylococcus lentus* have a high impact towards the metal degradation in the effluent. In conclusion, the concentration of bacteria is relatively higher in the root area of the plant which dominated by gram-positive bacteria and the bacteria that were identified have prominent effect on phytoremediation process.

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