

**DETERMINATION OF CELLULASE ACTIVITY FROM CELLULASE  
PRODUCING BACTERIA BY USING AGRO-WASTES AS SUBSTRATES**

**NOR EILYA NATASHA BINTI ABD HALIM**

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This Final Year Project Report entitled “Determination of Cellulase Activity from Cellulase Producing Bacteria by Using Agro-waste as Substrates” was submitted by Nor Eilya Natasha Binti Abd Halim, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Biology, in the Faculty of Applied Sciences, and was approved by



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Pn. Ilyanie binti Hj Yaacob

Supervisor  
Faculty of Applied Sciences  
Universiti Teknologi MARA (UiTM)  
Negeri Sembilan, Kampus Kuala Pilah,  
Pekan Parit Tinggi, 72000 Kuala Pilah  
Negeri Sembilan.



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Pn. Siti Norazura Binti Jamil

Coordinator FSG 661 AS201  
Faculty of Applied Sciences  
Universiti Teknologi MARA (UiTM)  
Negeri Sembilan, Kampus Kuala Pilah,  
Pekan Parit Tinggi, 72000 Kuala Pilah  
Negeri Sembilan.



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Dr. Aslizah binti Mohd Aris

Head of Biology School  
Faculty of Applied Sciences  
Universiti Teknologi MARA (UiTM)  
Negeri Sembilan, Kampus Kuala Pilah,  
Pekan Parit Tinggi, 72000 Kuala Pilah  
Negeri Sembilan

Date: \_\_\_\_\_

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## ABSTRACT

### DETERMINATION OF CELLULASE ACTIVITY FROM CELLULASE PRODUCING BACTERIA BY USING AGRO-WASTES AS SUBSTRATES

Microcrystalline cellulose (MCC) is an expensive commercial substrate that have high in demand in industries for screening of cellulase activity. In order to reduce the cost of screening procedure in industries for production of cellulase enzyme, the alternative substrates were used. The alternative substrates that were used are *Citrullus lanatus* (watermelon), *Psidium guajava* (guava), *Mangifera indica* (mango), *Cucumis sativus* (cucumber) and *Trichosanthes cucumerina* (snake gourd) have been used. This is because all of the alternative substrates consist of lignocellulosic composition that will be degraded by cellulase enzyme that are produced by *Bacillus subtilis*. The aim of this study are to measure the hydrolysis capacity of cellulase activity on different concentrations of *Citrullus lanatus* (watermelon), *Psidium guajava* (guava), *Mangifera indica* (mango), *Cucumis sativus* (cucumber) and *Trichosanthes cucumerina* (snake gourd) as substrates. The concentrations that were used in this research are 10 g/L, 20 g/L and 30 g/L respectively. Next, the adjustment of turbidity of bacterial suspension by standardizing to the  $1 \times 10^8$  CFU/mL. Thus, spot plate method were used to screen the cellulase production. Spot plate method were used for limitation of growth so that the bacterial colonies will never grow all over the plate. As a result, the cellulase enzyme that was produced from *Bacillus subtilis* gave positive results of cellulase activity on all of the agar medium containing MCC and alternative substrates. Thus, it can be concluded that all of the alternative substrates at 10 g/L, 20 g/L and 30 g/L of concentrations can be potential cost effective substrates in industries.