

**UNIVERSITI TEKNOLOGI MARA**

**ANTIOXIDANT AND  
ANTIBACTERIAL ACTIVITIES OF  
*Donax grandis* LEAVES AGAINST  
FOOD BORNE BACTERIA  
(*Staphylococcus aureus* AND  
*Escherichia coli*)**

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## AUTHOR'S DECLARATION

I declare that the work in this thesis entitled “Antioxidant and Antibacterial Activities of *Donax grandis* Leaves against Food Borne Bacteria (*Staphylococcus aureus* and *Escherichia coli*)” was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledged that I have been supplied with the Academic Rules and Regulations for Bachelor of Science (Hons.) Biology, Universiti Teknologi MARA, regulating the conduct of my study and research.

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## ABSTRACT

In this study, *Donax grandis* leaves were used as a sample. The leaves were chosen as it is believed to contain high phytochemistry properties. This study was conducted to evaluate the total phenolic content, antioxidant properties and antibacterial activities that were performed against *Staphylococcus aureus* and *Escherichia coli*, a food borne bacteria. The methods that were used include the determination of total phenolic content (TPC), free radical scavenging activity of 1, 1-Diphenyl-2-Picrylhydrazyl (DPPH) and investigation of zone of inhibition against tested bacteria by using agar disc diffusion. The higher TPC depicted at 100 mg/ml with 1021.8 mg GAE/ dry weight, while the highest percent scavenging obtained through DPPH assay was 81.27% at 100 mg/ml. Thus, the higher the concentration of the *Donax grandis* methanolic leaves extract, the greater the potential of antioxidant activities. In the other hand, the IC<sub>50</sub> value of the ascorbic acid was 22.55 mg/ml, whereas the IC<sub>50</sub> value of the *Donax grandis* methanolic leaves extracts was 87.55 mg/ml. This shows that *Donax grandis* methanolic leaves extracts had an intermediate antioxidant activity compared to the standard ascorbic acid that had strong antioxidant activity. Generally, the presence of antioxidant properties in plant extract could express the potential of the extract as an antibacterial agent. Unfortunately, the zone of inhibition for antibacterial activities of *Donax grandis* methanolic leaves extract did not appeared, perhaps due to the concentration used in the agar disc diffusion assay was differ as used in antibiotic test. Therefore, the concentrations used were not enough to exhibit the antibacterial activities against tested bacteria. To be concluded, the effect on the antibacterial activities of *Donax grandis* leaves extract shows unexpected outcome against food borne bacteria in this study, but the presence of antioxidant properties in *Donax grandis* leaves extracts were successfully been investigated.

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