UNIVERSITI TEKNOLOGI MARA

COMPARATIVE ASSESSMENT OF *Citrus* spp. IN PHYTOCHEMICAL ANALYSIS, ANTIBACTERIAL ACTIVITY AND DPPH SCAVENGING ANALYSIS

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Thesis submitted in fulfillment
of the requirements for degree of
Bachelor of Science (Hons.) Biology

Faculty of Applied Sciences

July 2019

AUTHOR'S DECLARATION

I declare that the work in this thesis 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, acknowledge that I have been supplied with the Academic Rules and Regulations for Undergraduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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Faculty	:	Applied Sciences
Dissertation Title	:	Comparative Assessment of *Citrus* spp**.** in Phytochemical Analysis, Antibacterial and Antioxidant Activities
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ABSTRACT

The *Citrus* spp. is the member of family Rutaceae, widely distributed in the tropical and subtropical countries. The rapid growth of the processing industry is demanding some natural antibacterial agents. Therefore, this study aims to determine the percentage yield of the *Citrus* spp. peel extracts using 95% ethanol, analysed phytochemical analysis as well as determine antibacterial and antioxidant activities. The peel extracts were prepared in 95% ethanol using rotary evaporator. The peel extracts of *Citrus* spp. were screened for the presence of biological compounds such as alkaloids, flavonoids, saponins, tannins and steroids. For the determination of the antibacterial activity of *Citrus* spp., the disc diffusion assay was used against *Staphylococcus aureus* (*S. aureus*) and *Staphylococcus epidermidis* (*S. epidermidis*). The *Citrus* spp. peel extracts were determined for it antioxidant properties using DPPH free radical scavenging activity. The result of this study showed *C. hystrix* had the highest percentage yield of crude extracts at 5.03% while the lowest was *C. aurantifolia* which was only 0.44%. The yield of crude extract of *C. microcarpa* was 0.76%. The phytochemical screening showed that the *Citrus* spp. have positive results regarding alkaloids, flavonoids, saponins, tannins and steroids. For antibacterial activity, Gram-positive bacteria of *S. aure*us and *S. epidermidis* were susceptible responds to the *C. hystrix* at concentration of 400 000 µg/ml. However, both bacteria were considered as intermediate response towards all combinations of *Citrus* spp. IC_{50} value of DPPH free radical scavenging assay for *C. microcarpa* was 0.593 µg/ml revealed that *C. microcarpa* had the highest antioxidant compared to the *C. hystrix* and *C. aurantifolia.* As conclusion, *Citrus* spp. peels extract can be used efficiently as an alternative for the production of potential antibacterial agent and beneficial to the food industry.

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