

UNIVERSITI TEKNOLOGI MARA

**ANTIOXIDANT ACTIVITY OF AJWA
DATE (*Phoenix dactylifera L.*) SEEDS,
STINGLESS BEE HONEY (*Trigona
itama*) AND THEIR COMBINATIONS**

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of the requirements for the degree of
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AUTHOR 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 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 institutions 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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ABSTRACT

Oxidative stress, a physiological imbalance between antioxidant and oxidant in favor of oxidant is one of the major concern worldwide due to its pathological effect. Antioxidant equipped in human body serve as a shield to protect biological sites from emergence of free radicals in cells. This study focused on identifying potential antioxidant properties within Ajwa date (*Phoenix dactylifera*) seeds extract, stingless bee honey (*Trigona itama*) and their combination at three different ratios (1:1, 1:2 and 2:1) were tested through TPC, DPPH and FRAP assay. Percentage yield of date (*Phoenix dactylifera*) seeds extract obtained was 6.8% using 50% acetone as extraction solvent. Physicochemical test of stingless bee honey was done on three parameters to determine the purity of honey. *T. itama* honey contained 23.9% moisture, 0.7% ash and pH of 3.7. At 100 µg/ml of concentration, phenolic content of stingless bee honey and date seeds extract were 912.19 ± 3.54 µg GAE/g and 749.49 ± 3.73 µg GAE/g, respectively. Scavenging activity of stingless bee honey and date seeds extract at 100 µg/ml were 160.17 ± 0.11 µg AAE/g and 143.95 ± 0.07 µg AAE/g. At 100 µg/ml, FRAP value of stingless bee honey and date seeds extract were at 683.95 ± 3.62 µg AAE/g and 521.29 ± 5.42 µg AAE/g, respectively. As for combination test by DPPH assay, scavenging activity of date seeds extract : stingless bee honey (1:1), stingless bee honey : date seeds extract (1:2) and stingless bee honey : date seeds extract (2:1) were 209.32 ± 1.93 µg AAE/g, 224.83 ± 2.55 µg AAE/g and 217.33 ± 2.90 µg AAE/g, respectively. FRAP value of combination test were 716.48 ± 3.94 µg AAE/g for date seeds extract : stingless bee honey (1:1), 1486.05 ± 1.38 µg AAE/g for stingless bee honey : date seeds extract (1:2) and 876.11 ± 4.64 µg AAE/g for stingless bee honey : date seeds extract (2:1), respectively. The combination of samples of different ratios possessed high antioxidant activity compared to both samples alone. Through combination test, mixture of both samples have potential to be seen as a health-promoting product to fight the pathological effect of free radicals due to their antioxidant activity.

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