

**UNIVERSITI TEKNOLOGI MARA**

**EVALUATION OF ANTIOXIDANT PROPERTIES  
OF METHANOL AND AQUEOUS EXTRACT OF  
*Rhodomyrtus tomentosa* (Aiton) Hassk.  
LEAVES**

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## DECLARATION

Project entitled “Evaluation of Antioxidant Properties of Methanol and Aqueous Extract of *Rhodomyrtus tomentosa* (Aiton) Hassk. Leaves” is a presentation of my original research work. Whenever contributions of others are involved, every effort is made to indicate this clearly, with due reference to literature, and acknowledgement of collaborative research and discussion. The project was done under the guidance of a Project Supervisor, Dr. Mazura binti Bahari and a Project Co-supervisor, Mrs. Evana binti Kamarudin. It has been submitted to the Faculty of Health Sciences in partial fulfilment of the requirement for Bachelor in Medical Laboratory Technology (Hons.).

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## ABSTRACT

Natural antioxidants are all those essential elements that have the potential of stabilizing and eliminating free radicals from the body. *Rhodomyrtus tomentosa* (Aiton) Hassk. is a flowering plant mainly found in Southeast Asian country which includes Thailand and Malaysia and is said to often consumed as medicinal nourishment. In this study, the phytochemical constituent properties and antioxidant capacity of *R. tomentosa* leaves were assessed spectrophotometrically by two different extraction solvent, absolute methanol (alcohol) and distilled water (aqueous). The phytochemical constituent was determined with Total Phenolic Content (TPC) assay and Total Flavonoid Content (TFC) assay whereas the antioxidant capacity was determined by DPPH Radical Scavenging Activity assay and Ferric Reducing Antioxidant Power (FRAP) assay. In TPC assay, absolute methanol leaves extract of *R. tomentosa* gave significant result compared to aqueous leaves extract of *R. tomentosa* in consistent to gallic acid equivalents which are  $448.54 \pm 0.43$  mg GAE/g and  $263.93 \pm 0.33$  mg GAE/g of extracts, respectively, with a *p*-value less than 0.05. Whereas in TFC assay, the same trend occurred when absolute methanol leaves extract of *R. tomentosa* gave a significant result compared to aqueous leaves extract of *R. tomentosa* in consistent to quercetin equivalents which are  $6495.23 \pm 64.756$  mg QE/g and  $777.01 \pm 4.053$  mg QE/g of extracts, respectively (*p* < 0.05). In DPPH radical scavenging activity, the IC<sub>50</sub> were found to be in the order of ascorbic acid ( $16.67 \pm 0.199$  µg/mL) > absolute methanol leaves extract of *R. tomentosa* ( $21.96 \pm 0.033$  µg/mL) > aqueous leaves extract of *R. tomentosa* ( $32.00 \pm 0.014$  µg/mL), and these values are significant between each other (*p* < 0.05). Lastly, in FRAP assay, the absolute methanol leaves extract of *R. tomentosa* showed a significantly (*p* < 0.05) higher value of FRAP (expressed as gallic acid equivalents) as compared to aqueous leaves extract of *R. tomentosa* which is  $702.74 \pm 7.361$  mg GAE/g and  $137.29 \pm 2.252$  mg GAE/g, respectively. Data are expressed in mean (SEM) (*n* = 3), with *p* value less than 0.05 are considered significant. In conclusion, absolute methanol is an ideal solvent for extraction to further assess phytochemical constituent and antioxidant capacity of *R. tomentosa* in the future. Further in vivo studies are needed explicitly aiming at the potential antioxidant ability on the leaves extract of *R. tomentosa*.

**Keywords:** Antioxidant, TPC, TFC, DPPH, FRAP, *Rhodomyrtus tomentosa*, phenolic, flavonoid