UNIVERSITI TEKNOLOGI MARA

ANTI-INFLAMMATORY AND ANTIOXIDANT PROPERTIES OF ETHANOL LEAF EXTRACTS OF RHODOMYRTUS TOMENTOSA AGAINST RAW 264.7 MACROPHAGE CELLS

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ABSTRACT

Prolonged inflammation and oxidative stress contribute to a plethora of detrimental inflammatory and oxidative diseases. Previous studies have proven *Rhodomyrtus tomentosa* leaves are well-known anti-inflammatory and antioxidant agent. The present study was conducted to further identify PIC in 95% ethanol extracts of *R. tomentosa* leaves (EtRT) found in Malaysia and assess their cytotoxicity, anti-inflammatory, and antioxidant activities in search of a potential dual-effect drug. Identification of PIC in EtRT extracts was done by utilizing RP- HPLC and LC-MS procedures. Cytotoxicity properties were assessed with the MTT assay while anti-inflammatory properties were assessed by NO inhibition assay and the regulation of iNOS protein expression through the Western Blotting (WB) assay, both in RAW 264.7 macrophage cells. Preliminary antioxidant properties assessment was determined with DPPH radical scavenging activity and FRAP assay, further followed with inhibition of intracellular ROS assay in RAW 264.7 macrophage cells. During RP-HPLC analysis, PIC in EtRT extracts eluted at 4.054 minutes and was confirmed by comparison to its PIC standard peak eluted at 4.028 minutes. Its existence was confirmed by using LC-MS analysis, comparing the eluted peak with the authentic PIC standard. During the MTT assay, the IC_{50} for EtRT extracts was obtained to be 204.70 µg/mL and the samples were not cytotoxic to the cells up to 7.813 µg/mL. EtRT extract showed 56.73% at 7 µg/mL whereas in the WB assay, EtRT extract at 7 µg/mL at 0.855 µg/mL can reduce iNOS protein expression in RAW 264.7 macrophage cells up to 39.69%. During the preliminary antioxidant assessment, EtRT extracts at low concentrations dose dependently showed the ability to scavenge DPPH radicals and ferric ions. As going deeper into the study, EtRT extracts are also able to inhibit up to 30.2% intracellular ROS even at their highest tested concentrations that do not cause cytotoxicity. Hence, EtRT extracts have the potency of being an anti- inflammatory and antioxidant agent; however, further molecular and in vivo studies are needed to prove these findings.

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TABLE OF CONTENTS