THESIS

ISOLATION AND ANTIOXIDANT ASSAY OF SECONDARY METABOLITE COMPOUNDS FROM ETHYL ACETATE EXTRACT OF *Clausena harmandiana's* STEM BARK

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MASTER OF CHEMISTRY STUDY PROGRAM

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UNIVERSITAS AIRLANGGA

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DEGREE REQUIREMENTS

ISOLATION AND ANTIOXIDANT ASSAY OF SECONDARY METABOLITE COMPOUNDS FROM ETHYL ACETATE EXTRACT OF *Clausena harmandiana's* STEM BARK

THESIS

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In the Master of Chemistry Study Program

At the Faculty of Science and Technology Universitas Airlangga

By:

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APPROVAL PAGE

THESIS

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On December 2022

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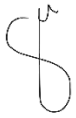
The author realizes that there are still many shortcomings in the writing of this thesis, so constructive criticism and suggestions are highly expected for the perfection of this thesis manuscript.

Surabaya, Dec 2022

Writer,



Theint Su Wai

Su Wai, Theint, 2022, Isolation and Antioxidant Assay of Secondary Metabolite Compounds from Ethyl Acetate Extract of *Clausena harmandiana*'s Stem Bark, this final project is under the guidance of Prof. Dr. Nanik Siti Aminah, M.Si. and Dr. Khun Nay Win Tun. Department of Chemistry, Faculty of Science and Technology, Universitas Airlangga, Surabaya.

ABSTRACT

Clausena harmandiana is a species of the genus *Clausena* and the family Rutaceae that has the potential as a source of bioactive chemical compounds. This research aims to isolate secondary metabolite compounds from *Clausena harmandiana* and determine antioxidant activity by using a DPPH assay. The extraction method used was the maceration method using methanol solvents and partitioned with n-hexane solvent, then with ethyl acetate and methanol solvents. The ethyl acetate extract was evaporated with a rotary vacuum evaporator to become a thick extract. The obtained ethyl acetate extract was separated and purified using vacuum liquid chromatography (VLC) and gravity column chromatography (GCC) techniques. The pure secondary metabolite compounds obtained were structurally determined based on UV-Vis, FTIR, and 2D NMR spectroscopy data. Three pure compounds have been isolated from ethyl acetate extract, namely clausine Z (**1**), 7-methoxyheptaphylline (**2**), and 7-hydroxyheptaphylline (**3**). The antioxidant test results showed the IC_{50} values of ethyl acetate extract and ascorbic acid were 825.33 ppm and 87.28 ppm, respectively. The percent inhibition of clauzine Z (**1**) and 7-methoxyheptaphylline (**2**) with a concentration of 250 ppm was 17.11 % and 2.87 %, respectively. It can be assumed that the ethyl acetate extract is very weak as an antioxidant and the isolated pure compounds have no potential as an antioxidant agent.

Keywords: 7-methoxyheptaphylline; 7-hydroxyheptaphylline; antioxidant; *Clausena harmandiana*; clausine Z; DPPH

ORIGINAL STATEMENT SHEET

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