PHYTOCHEMICAL OF CHROMOLAENA ODORATA

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PHYTOCHEMICAL OF *CHROMOLAENA ODORATA*

By

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A Project Report Submitted in Partial Fulfillment of the Requirements
For the Degree of Bachelor of Wood Science in the
Faculty of Forestry
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DEDICATION

To

My father, Ganesan a/l Muniandi and Mother, Mariammah a/p Ratnem

Lecturers, Family member and dear friends.

Thanks for giving such a love, support, patient and understanding.

ABSTRACT

C.odorata is commonly consumed as traditional medicine in some countries, including Malaysia. This study was aimed to identify the extractive values in *C.odorata* on a different type of solvents and parts of plants and analyzed its total phenolic contents (TPC) and phytochemical using Gas chromatography-mass spectrometry (GC-MS). In comparison with different solvents in parts which are leaf and stem extracts of *C.odorata* had the significantly different in yield of extraction and TPC, respectively. Among that, the leaf of this species had a great yield than the stem. The hot water extract on the leaf was found has the highest yield with hot water (27.96%) followed by methanol (26.56%), ethanol (26.33%), cold water (24.96%), and petroleum ether (5.54%) respectively. In the stem, the most extractive value was found in hot water (18.53%), followed by methanol (15.06%), cold water (13.46%), ethanol (12.40%), and petroleum ether (0.79%) respectively. In TPC, the leaf of this species had highest amount of phenolic compounds with hot water (331.80 ± 5.92 mg GAE/g DW) followed by methanol (318.71 ± 1.67 mg GAE/g DW) and petroleum ether (125.13 ± 8.84 mg GAE/g DW) and in stem the highest amount of phenolic compound was found in hot water(315.73± 2.37 mg GAE/g DW) followed by methanol (221.67 ± 0.01 mg GAE/g DW) and petroleum ether (12.84 ± 4.66 mg GAE/g DW). GCMS analysis of the leaf showed the presence of fatty acids, glycerides, sugar alcohols, alcohols, alkanes and chlorine compounds, and for the stem presence of alkanes, which contribute to its antioxidants agents.

ABSTRAK

C.odorata biasanya digunakan sebagai ubat tradisional di beberapa negara, termasuk Malaysia. Kajian ini bertujuan untuk mengenal pasti nilai-nilai ekstraktif dalam *C.odorata* pada jenis pelarut dan bahagian tumbuhan yang berlainan untuk menganalisis dengan jumlah kandungan penolik (TPC) dan fitokimia menggunakan spektrometri massa-kromatografi Gas (GC-MS). *C.odorata* mempunyai perbezaan dalam hasil pengekstrakan dan TPC. Di antara itu, daun spesies ini mempunyai hasil yang tinggi daripada batang. Ekstrak air panas pada daun didapati mempunyai hasil tertinggi dengan air panas (27.96%) diikuti oleh metanol (26.56%), etanol (26.33%), air sejuk (24.96%) dan petroleum eter (5.54%) masing-masing. Dalam batang, nilai yang paling ekstraktif didapati dalam air panas (18.53%), diikuti oleh metanol (15.06%), air sejuk (13.46%), etanol (12.40%), dan petroleum eter (0.79%) masing-masing. Dalam TPC, daun spesies ini mempunyai sebatian penolik yang tinggi dengan air panas (331.80 ± 5.92 mg GAE / g DW) diikuti oleh metanol (318.71 ± 1.67 mg GAE / g DW) dan ether petroleum (125.13 ± 8.84 mg GAE / g DW) dan dalam batang jumlah yang paling banyak terdapat sebatian penolik yang terdapat dalam air panas (315.73 ± 2.37 mg GAE / g DW) diikuti oleh metanol (221.67 ± 0.01 mg GAE / g DW) dan petroleum ether (12.84 ± 4.66 mg GAE / g DW). Analisis GCMS daun menunjukkan kehadiran asid lemak, gliserida, alkohol gula, alkohol, alkana dan sebatian klorin, dan untuk kehadiran batang alkana, yang menyumbang kepada agen-agen antioksidannya.

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APPROVAL SHEET

I certify that this research project entitles “Phytochemical of *Chromolaena Odorata*” by “Mala a/p Ganesan” has been examined and approved as a partial fulfillment of the requirements for the degree of Bachelor of Wood Science and Technology in the Faculty of Forestry, University Putra Malaysia.

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Date: January 2018

TABLE OF CONTENTS

LIST OF TABLE

LIST OF FIGURES

LIST OF ABBREVIATIONS

ANOVA	Analysis of variance
C	celcius
CH3OH	Methanol
cm	centimetre
DW	Dry weight
G	gram
GAE	Gallic acid equivalent
hr	hour
m	meter
ml	millilitre
min	minit
nm	nanometre
NaOH	Sodium hydroxide
Na_2SO_3	Sodium carbonate
NaCl	Sodium chloride
pH	potential of hydrogen
%	Percentage

CHAPTER 1

INTRODUCTION

1.1 Background

Phytochemicals are defined as chemicals generate by plants. It improves the health condition of organisms, and those attributed to macronutrients and micronutrients. Phytochemicals are generally used to thrive the predators or pathogens in human (Bhanu *et al*., 2011). There is wide evidence to support the health benefits of the diet in the form of fruits, vegetable, legumes, whole grains and nuts (Doss *et al*., 2009).

Moreover, some plants also have medicinal elements such a shrub and herbs that provide colour, aroma, and flavour, and inviting attention from potential consumers. It also makes many chemical compounds for biological functions. Some Phytochemicals compounds that can be found in plants are carbohydrates, proteins, alkaloids, flavonoids, steroids, saponins, tannins and so on (Paulseit, 2010).

Apart from that phytochemical in some plants have been used as animal feed and others as traditional medicine. The leaves of some plants are also used to scent aromatic baths and used as emergency medication and prevention of chronic diseases (Farnidah, 2009). Therefore, the present study carried out for finding phytochemicals in species of *Chromleana odorata* with the

botanical aspect and to provide some information on the phytochemical constituents.

1.2 Problem statement and justification

The fresh leaves and extract of *C. odorata* are used as traditional herbal treatment and medicinal uses in some developing countries. This plant was uses for burns, soft tissue wounds and skin infections (Vijayaraghavan *et al*., 2017). Leaves of *C.odorata* helps to reduce the appetite for smoking, cures fever, coughing, and stomachache (Defilipps, 2004). Although Malaysia is relatively abundant of *C. odorata*, the use of *C. odorata* is still limited. This plant even can use as animal feed, traditional herbal and as medicinal use. In previous studies, the research on *C. odorata* very scanty and quantification on its phytochemical not yet published. The species of *C. odorata* choose because of its sustainability abundant, and fast spread species and sustainability in medicinal. However, in Malaysia, *C.odorata* usage is very low compared to other Asian countries. For these reasons, a research must be conducted persistently to know what are the phytochemicals can be found in *C. odorata* and quantify phytochemical that has medicinal values and other values through GCMS.

1.3 Objectives

General objective

- To quantify the phytochemical of *C. odorata* that available in idle areas in Malaysia.

Specific objectives

- To identify the extractive yield in *C.odarata* on a different type of solvents and parts of the plant.
- To analyse the phytochemicals of *C.odarata* on total phenolic compounds and GCMS

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