

UNIVERSITI TEKNOLOGI MARA

**EFFECT OF 6-BENZYLAMINOPURINE ON THE
PRODUCTION OF SECONDARY METABOLITES
OF *CENTELLA ASIATICA***

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TABLE OF CONTENTS

TITLE	PAGE
TITLE PAGE	
APPROVAL SHEET	i
ACKNOWLEDGEMENT	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF ABBREVIATIONS	viii
ABSTRACT	ix
CHAPTER ONE	1
1. INTRODUCTION	1
1.1 Background of study	1
1.2 Problem statement	2
1.3 Objectives of the study	3
1.4 Hypothesis	3
1.5 Significance of the study	4
1.6 Limitations	4
CHAPTER TWO	5
2. LITERATURE REVIEW	5
2.1 Generalities of <i>Centella asiatica</i>	5
2.1.1 Morphology and Habitat	8
	iii

ABSTRACT

Centella asiatica L. is commonly known for its medicinal and nutritional values throughout the world. Numerous studies proved the therapeutic effects of this plant including wound healing and anti-inflammatory properties. The medicinal values of this plant were mainly attributed to the presence of several triterpenes, namely asiatic acid, madecassic acid, asiaticoside and madecassoside. The concentration of phytochemicals was found higher in the leaves compared to the roots and petioles. *C. asiatica* is a subject to exploitation and natural sources of the plant have been vastly depleted. Phytohormone such as 6-benzylaminopurine (BAP) and kinetin are plant hormones that enhance the metabolic activities of plant which results an increase in the production of secondary metabolites, promote growth, formation of leaves and length of shoots. There were not enough study that proves the effect of BAP on *C. asiatica*. The aim of this study was to evaluate the effect of BAP on the production of triterpene components of *C. asiatica*. Fresh plants of *C. asiatica* were divided into two groups; 1) was treated with 2.0 mg/L BAP and 1.0 mg/L kinetin and 2) was under the same controlled growth condition but without both of the phytohormones. They were harvested for 14 days. The triterpenoidal contents were analyzed by using High Performance Liquid Chromatography (HPLC) with DAD detector. Asiatic acid was used as a reference compound and its retention time was recorded at 28.7 minute while the asiatic acid from the crude extracts was eluted at 39.0 minute using same HPLC conditions. There was significant increase in the production of triterpenoidal components of *C. asiatica* plant which was treated with BAP.

CHAPTER ONE

1. INTRODUCTION

1.1 Background of study

Centella asiatica or gotu kola also known as *Hydrocotyle asiatica* is a perennial, herbaceous creeper with kidney-shaped leaves, found mostly in Southeast Asia (Govindan et al., 2007). This specie can also be found in Malaysia and is known as pegaga. According to Cheng et al (2004), the plant is from Apiaceae family, grows up to 50 cm long and their leaves are with the shape of a fan. The plant is commonly consumed by the Malay elders as salad. They can also be cooked as vegetable and blended into a drink (Hashim et al., 2011).

Various health benefits from consuming the plant is associated with healthy veins and blood vessels, treatment of skin diseases, improve brain function and memory (Tiwari et al., 2011). The plant also used as a sedative, as an anti-leprosy drug, and as an anti-ulcer drug in China and India (Wang et al., 2003). According to Howes & Houghton (2003), the plant is also capable to delay aging and prevent dementia. Based on Govindan et al. (2007), *Centella asiatica* is useful in venous insufficiency, venous hypertensive angiopathy, echolucency in carotid and femoral plaques, airline flight