UNIVERSITI TEKNOLOGI MARA

ELICITATION OF ASIATIC ACID IN *CENTELLA ASIATICA* USING *KAPPAPHYCUS ALVAREZII*

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ABSTRACT

Centella asiatica is an endangered medicinal herb which used in the preparation of herbal drugs mainly due to the presence of four pentacyclic triterpene which are asiatic acid, asiaticoside, madecassic acid and madecassoside. It's over exploitation necessitates the development of conservation strategies and enhanced the production of secondary metabolites. In present study, the effect of various concentration of seaweed *Kappaphycus alvarezii* elicitor was used to increase the amount of asiatic acid production in *C. asiatica.* Four difference concentration of seaweed elicitor was treated in *C. asiatica* which are 0 g/L, 2g/L, 4g/L and 8g/L. They are harvested at day 0, 7, 14 and 21 and soak with methanol to obtain crude brown extract. The amount of asiatic acid containing in the samples was analyzed by HPLC and area under the curve of retention peak was calculated by using a formula. The diameter of leaf, number of new shoots and flowers were measured during successive stages of development. In conclusion, *K. alvarezii* can increase the production amount of asiatic acid in *C. asiatica* at shorter time, which at day 14, concentration of 4g/L and 8 g/L are the best while the additional of certain concentrations of seaweed elicitor can induce flowering in *C. asiatica*.

CHAPTER ONE

INTRODUCTION

1.1 Background of study

Centella asiatica also known as 'Pegaga' or 'Gotu Kola' which come from the family of *Apiaceae*, a subfamily of the *Hydrocotyle* and genus of *Centella*. It is a slender creeping perennial herb that found in shady, moist area and usually as an annual plant in India, Sri Lanka, Malaysia, and other parts of Asia (Gandi & Giri, 2013). It also grows very well in sandy and clay soil rich in humus and organic matter (Jamil, Qudsia, & Salam, 2007). It produces a group of bioactive compounds collectively called 'Centellosides or Centelloids' which are ursane type of pentacyclic triterpenoid saponins and sapogenin that act as secondary metabolites. According to Gandi *et al.,* (2013), the Centellosides include asiaticoside, centelloside, madecassoside, brahmoside, asiatic acid, madecassic acid, thankuniside and others. However, the main bioactive compounds in *C. asiatica* are asiatic acid, asiaticoside, madecassic acid, and madecassoside (Kim *et al.,* 2009). It has been established that the climatic conditions, soil texture, and agronomic work will highly