

# CHAPTER I



## INTRODUCTION

Impressions of beauty change over time, as do our skin. The protection of the age of skin will be attractive for alternative remedy for antiaging of the potential value in high quality cosmetic products. This project was to develop a formulation of active ingredient of **asiaticoside** from *Centella asiatica* in microemulsion gel, that can keeps skin moist and elastic for antiaging properties with the results of using purified **asiaticoside** in formulations.

**Asiaticoside** isolated from *C. asiatica* has a growth factor activity. It is a rejuvenate and restoring antiaging active ingredient which increases collagen synthesis and fibroblast proliferation. It can also increase the formation of hyaluronic acid (Shukla et al.,1999) that is present naturally in mammals, with the highest concentration found in soft connective tissue; and has similar antiaging properties as collagen. It also can keep the skin moist and elastic in the same way. It is able to stimulate the basic fibroblast growth factor, which has the broadest range of target cells, including all those involved in wound healing viz. endothelial cells, fibroblasts, myoblast etc.

Throughout history, plant materials have served as a reservoir of potential new modern drugs and some plants have been investigated for medicinal activity. *C. asiatica* with major contributions to modern drug therapy might be

attributed to the successful conversion of herbal medicines to drugs. At present the use of medicaments from plant origin is increasing. The purified **asiaticoside** as the active ingredient, can exert more powerful biochemical effects. *C. asiatica* is now used in preparation of pharmaceutical and high quality cosmetic formula.

The Isolation & Characterisation of *C. asiatica* using high performance liquid chromatography ( HPLC ) & high resolution liquid chromatography-mass spectrometry ( LC-MS ) with electrospray ionisation result in rapid and sensitive analysis. (Mauri, p. et al.2000). The resolution LC-MS has been widely used in the analysis of plant extracts. This project study takes advantage of the technological advances in high resolution LC-MS with electrospray ionisation to separate and identify the components of herbal extracts from *C. asiatica*. HPLC & high resolution LC-MS and electrospray ionisation are a good complementary analytical tool for the determination of **asiaticoside** obtained from *C. asiatica*. These approaches constitute powerful analytical tools for rapid screening assignment of **asiaticoside** obtained from *C. asiatica*.

In this study microemulsion gel formulation was prepared. It is a dynamic system in which the amphiphiles, water and oil, exchange very quickly within each other. The microemulsion gel is isotropic and thermodynamically stable, which is a consequence of the ultra low interfacial tension between the oil and water phase. In this experiment, the microemulsion gel will be formulated in different surfactant mixtures, which contribute to the low tension thus affecting the curvature of the droplet. The active ingredients of **asiaticoside** incorporated in microemulsion

gel will, therefore, separate between the aqueous and oil phases depending on their lipophilicity and hydrophilicity. The lipophilicity of the **asiaticoside** enhances its solubility in a reservoir, which may give a sustained release effect in microemulsion gel.

The penetration studies of **asiaticoside** in microemulsion gel will be evaluated with diffusion by using a modified Franz diffusion cell the active components of **asiaticoside** was determined by HPLC.

### **Purposes of Study**

- To isolate & characterise the **asiaticoside** that obtained from *C. asiatica* using HPLC & high resolution LC-MS with electrospray ionisation.
- To develop formulation of **asiaticoside** in microemulsion gel.
- To evaluate the penetration of **asiaticoside** in microemulsion gel formulations.

### **Potential Benefits and Justifications of The Project**

1. **Asiaticoside** was extracted and purified from *C. asiatica* using HPLC & High Resolution LC-MS with Electrospray Ionisation.

2. This project finds the development for a new formulation of active ingredients of **asiaticoside** from the *C. asiatica* in microemulsion gels that keeps skin moist and elastic for antiaging properties

3. The development of “ skin ” penetration studies of **asiaticoside** in the microemulsion gel formulations for selection the best product was obtained.

4. This project avoids the use of animal experimentation, which is an important consideration in the modern world.

5. To use both economical and nontoxic herbal medicines instead of expensive synthetic chemicals.