

CHAPTER 1

INTRODUCTION

Acne vulgaris is a common skin disease, affecting about 70-80% of adolescents and young adults. It is a multifactorial disease of the pilosebaceous unit.[1] The prevalent bacterium implicated in the clinical course of acnes are *Propionibacterium acnes* and *Staphylococcus aureus*, that normally inhabits the skin and implicated in the inflammatory phase of acnes. [2] *Propionibacterium acnes* has been described as an obligate anaerobic organism. It is implicated in the development of inflammatory acnes by its capability to activate complements. On contrary, *Staphylococcus aureus*, an aerobic organism, usually involves in superficial infections within the sebaceous unit. [3]

For many years, antibiotic (tetracycline, erythromycin and clindamycin), benzoyl peroxide, azelaic acid and adapalene have been used to treat acne vulgaris. However, the antibiotic resistance has been increasing in prevalence within the dermatologic setting. The development of antibiotic resistance is multifactorial, including the specific nature of the relationship of bacterial to antibiotics, how the antibacterial is used, host characteristics, and environmental factors. To overcome the problem of antibiotic resistance, medicinal plants have been extensively studied as alternative treatments for infectious diseases. [4]

Plant extracts have been widely used as topical applications for wound-healing, anti-aging, anti-inflammatory, antibacterial and disease treatments. It is safer than using chemicals to promote human health. Many researchers now turn to do experiments on various plant herbs. Plants that have been studied for the reduction of acnes and skin oiliness are tea tree, guava, mangosteen, onion, clove, curcuma, and cinnamon.

Many research works focused on finding of natural antimicrobial agents due to their low side effect and less bacterial resistant. Lots of commercially plant extracts were claimed for anti-acnes capability but some have no supported evidence. In this study, the bacterial activities of commercial extracts (*Garcinia mangostana*, *Psidium guajava* and *Cinnamomum zeylanicum*) against *P. acnes*, *S. aureus* and MRSA were determined and a suitable gel product was developed.

Objective

1. To evaluate the antimicrobial activity of some plant extracts against acne related bacterial strains
2. To develop topical anti-acne product.