

CHAPTER I

INTRODUCTION

The rational for the study

Fungi occur ubiquitously and are well adapted to use a wide range of substrates as their carbon and nitrogen source. The growth of many fungi is especially difficult to control because of their ability to metabolize many substances.

The fungi of the genus *Candida* and *Malassezia* are of the normal flora found in human under certain condition. They can promote opportunistic infections in body. *C. albicans*, the most important species of *Candida* causes thrush, vaginitis, esophagitis, and chronic mucocutaneous candidiasis. (Warren, 2008) *Malassezia* have been associated with a number of diseases affecting the human skin, such as pityriasis versicolor, *Malassezia* (*Pityrosporum*) folliculitis, seborrheic dermatitis and dandruff. (Gupta, et al., 2004).

Now a day, many saponins have been isolated and characterized from *Asparagus* (Shimoyamada, et al., 1990; Marc, et al., 2007; Uma, et al., 2009). Antimicrobial activities have been reported for several kinds of saponins (Shimoyamada, et al., 1990; Uma, et al., 2009; Elisa, et al., 2006; Marc, et al., 2007). There are some reports on antibacterial and antifungal activities of *Asparagus racemosus* Willd. roots (Mandal, et al., 2000b; Uma, et al., 2009). Thus, this study aimed to determine the antifungal activity of the various extracts from *A. racemosus* and the synergistic effect of the *A. racemosus* extracts combined with the antifungal agents. The saponin contents in the extract as well as the extract stability were studied. The information could be beneficial for development of the natural products as antifungal for industries.

The market for products containing natural ingredients, such as food supplements, cosmetics and pharmaceuticals provides relatively high profit margins. It is estimated by the World Health Organization that 80 percent of the global population still uses plants as their primary source of medicine (Farnsworth, et al., 1985). In industrialized nations like the US, a significant percentage of drugs in current use is derived from plants (Cragg and Newman, 2001). Plant extracts have numerous active

components with various biochemical actions. It is intriguing to use the multiplicity of biochemical activities found in plants as the multifunction in formulation. One of benefits when used the natural compounds in antifungal formulation is the new alternative treatment for treat drug resistant patients.

The objective of the study

1. To develop methods for preparation of *A. racemosus* extracts
2. To study saponin contents in each extract using shatavarin IV as a marker
3. To investigate antifungal activity of the various extracts from *A. racemosus* using
 - 3.1 Disc diffusion method for screening the antifungal activity of each extracts
 - 3.2 The minimum inhibitory concentration (MIC) values using the broth microdilution method
4. To determine synergistic effect of the *A. racemosus* extracts when combined with the antifungal agents
5. To determine stability of the ethanolic extracts

The expected output of the study

1. The information in antifungal activity of the various extracts from *A. racemosus*
2. Publication in an international journal and/or patent