CHAPTER 1

INTRODUCTION

Skin aging is the progressive deterioration of physiological functions in skin organisms, leading to several undesirable visual appearances (e.g. fine lines, wrinkles, dry skin, sagging and aging spots). With age, the connective tissues are loosened from decreasing of fibroblast procollagen synthesis and increasing of collagen degradation by matrix metalloproteinase enzymes (MMPs) up-regulation [1]. There are two major factors of skin aging, i.e. intrinsic and extrinsic factors. Intrinsic factors are the inside factors causing a natural occurrence along with senescence. On the other hand, extrinsic factors are influenced by environments (such as cigarette, chemicals, pollutions and ultraviolet radiation) causing premature aging [2]. These external factors, especially the UV radiation, are capable to bring the massive skin aging due to generation of free radicals known as reactive oxygen species (ROS) [3]. ROS result in skin structure breakdown by attacking cell membranes, interfering genetic transcription, inducing MMPs modulation, and also directly destroying skin collagen [2, 4]. Natural antioxidants can be considered as a key to create the novel cosmeceuticals protecting skin from those free radicals.

Nowadays, natural cosmeceutical markets are progressively expanded especially the anti-aging (or anti-wrinkle) products, correlating with the increase of consumers whom obsessed by maintaining young appearance and aging elegantly [5]. The worldwide cosmetic sales approach about 170 billion US$ in every year while the largest segment (about 27 %) belongs to skin care products. Furthermore, the anti-

aging market is the fastest growing among these skin care industries with annually growth rates of 8-12 % [5, 6]. Therefore, many cosmetic companies introduce the products into the global trades to seize on their market share, and so do the raw material industries. With the market trends of "natural cosmeceuticals", a numerous of plant extracts are also pushed into the markets [7]. They are commercially used and claimed to provide anti-aging or anti-wrinkle effects. However, some of them still not have enough scientific evidences to prove these effects.

1.1 The objectives of study

The aims of this study were to investigate some of the commercially claimed extracts for their antioxidant activities, and to select the most proper extract for developing into anti-wrinkle serum.