CHAPTER I

INTRODUCTION

This chapter contains 4 parts including rationale for the study, purpose of the study, expected outputs, and expected outcomes. The detail of each part is given below.

1. Rationale for the study

The interest of consumers on herb-containing consumer products has increased dramatically in the last decade. Consumer surveys found that about fifty percent of Americans now use herbs [1]. In addition, the World Health Organization has estimated that 80% of the world's population continues to use products containing extract of plants [2]. According to these and availability of several herbs in Thailand, this is a good opportunity for Thai people to develop and produce products containing herb extract and cleansing lotion is one of interesting products.

Cleansing lotion is a skin care product which is used to remove dirty materials such as oily residues from cosmetics. Normally, this cleanser is applied by hand to remove oily deposits of colors or pigments from the skin, and then is wiped out with tissues or cloth. Oil-in-water (o/w) emulsions work satisfactorily for this purpose because the water phase can wash the dirt without leaving any oily feeling. In the last decade, there has been increasing interest in adding ingredients for other cosmetic purposes. For example, alpha hydroxyl acids (AHAs) are added to facial skin cleanser formula to provide skin lightening effects.

Alpha-hydroxyacids (AHAs) are a group of naturally occurring organic acids with a hydroxyl group alpha to the carbonyl carbon of the carboxylic acid group, which occurs in natural sources. For example, tartaric acid occurs in grapes and tamarind fruit, malic acid occurs in apples, and glycolic acid occurs in soured milk [3-5]. The main action of AHAs is to exfoliate dead skin cells or stimulate cell renewal by weakening bonds that hold dead skin cells together, thus resulting in skin which looks bright [4-9]. Due to its action, topical products containing AHAs are frequently prescribed by

dermatologists and several kinds of skin care product with AHAs are available in markets. Normally, daily cosmetic products in the market contain 2-10% of glycolic or lactic acids and their pH range from 3.5-4.0 [10-12].

Despite the increased use of AHA in cosmetic products, the debates over the potential differences of natural versus synthetic AHAs have still been ongoing for several years. The synthetic AHAs have a high ability to stimulate cell renewal and high irritation as well while these properties are reduced in natural AHAs. It has been found that the therapeutic index (the ratio of skin stimulation to irritation) of the natural AHAs surpasses that of the synthetic AHAs [10]. For example, the therapeutic index (TI) for synthetic lactic acid (5%) was 12.7 while that was 16.2 for lactic acid (5%) from honey extract. The possible reason for support this finding is that natural AHAs contain natural soothing agents that can reduce their irritation potential, and not interfere with the stimulatory activity. Therefore, in the clinical viewpoint, using naturally derived AHAs in cosmetic products will provide much more benefit comparing to synthetically derived AHAs.

Currently, many herbal extracts have been incorporated in cosmetic products and tamarind extract is one of them. Tamarind *(Tamarindus indica L.)*, which belongs to the Leguminosae family, is a common tree which is usually found in humid tropical areas including Thailand. Its fruit pulp with acidic taste has been used for centuries as skin-scrubbing material to smoother and lighter skin appearance. The improving visible effect on skin raises the question about the action of the components contained in its fruit pulp. Several studies revealed that the fruit pulp of tamarind contained naturally occurring organic carboxylic acids, alpha hydroxyl acids (AHAs) including tartaric acid (8-23.8%), ascorbic acid (0.7-3%), lactic acid (2%) and malic acid [13-21]. The main action of tamarind pulp's extract is to exfoliate dead skin cells as action of AHAs [22-24]. In addition, lactic acid is also a highly effective moisturizer [24]. Citric acid stimulates collagen synthesis when topically is applied, while both tartaric and malic acid boost skin elasticity [25-28]. Besides AHAs, both pectin (2.5%) and invert sugar (30-41%) also found in tamarind fruit pulp possess hygroscopic property and can improve the better looking of the skin by their moisturizing action [29]. Event though, there have a couple of

studies reported about the formulation of product containing extract of tamarind's fruit pulp [30-31], there is no study evaluating the clinical effects of these products.

Due to the absence of clinical study of product containing tamarind's fruit pulp extract, we, therefore, conducted this study to determine the efficacy, safety of facial cleansing product containing extract of tamarind's fruit pulp. In addition, we determined the subjects' satisfaction and the adherence of participants to the protocol.

2. Objectives

1. To determine the efficacy of facial cleansing product containing extract of tamarind's fruit pulp (test product)

1.1 To assess the color of facial skin after using test product compared with the control product.

1.2 To assess the moisture of facial skin after using test product compared with the control product.

1.3 To assess the elasticity of facial skin after using test product compared with the control product.

1.4 To assess the pH of facial skin after using test product compared with the control product.

1.5 To assess the satisfaction of the participants after using test product compared with the control product.

2. To determine the safety of test product compared with the control product

3. Expected outputs

1. To transfer the knowledge about the efficacy and safety of facial cleansing containing extract of tamarind's fruit pulp in clinical use

2. To publish the research study in both local and international journals

4. Expected outcomes

1. To have a guideline for developing the facial product from the natural resource, increasing value, grade and quality of product in both local and international cosmetic industries

2. To apply the method of this study with other products for increasing the evidence of clinical use of cosmetic products

3. To know the efficacy and safety of facial cleansing contained tamarind fruit pulp extract that ensured people who are going to use this product