

# FORMULATION AND PHYSICOCHEMICAL STABILITY OF 20% GLYCOLIC ACID CREAMS USING POLYACRYLAMIDE, C13-14 ISOPARAFFIN, LAURETH-7 AND COMBINATION OF POLYACRYLAMIDE, C13-14 ISOPARAFFIN, LAURETH7 WITH A GLUKOLIPID OF VEGETABLE ORIGIN

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## Abstract

*Glycolic acid is a  $\alpha$ -hydroxy acids (AHAs). It are used in skin lightening creams. It were developed formulation of 20% glycolic acid creams. The creams were made using 4% of polyacrylamide, C13-14 isoparaffin, laureth-7 as a thickening agent for cream gels and emulsions base and combination of 1.5% of polyacrylamide, C13-14 isoparaffin, laureth-7 and 5% of a glukolipid of vegetable origin as emulsifier agent. Then the physicochemical stabilities were tested using climatic chamber for 30 days at 40°C with 75% Relative Humidity (RH). The parameters stability observed were organoleptic, droplet size, density, viscosity, emulsion type, phase separation, pH and concentration of acid glikolat. Organoleptis, droplet size, density, viscosity, type of emulsion and phase separation of all of creams were stable, but the pH decreased during the storage time. The time of the concentration of glycolic acid remaining to 90% in cream using using 4% of polyacrylamide, C13-14 isoparaffin, laureth-7 and using combination of using 4% of polyacrylamide, C13-14 isoparaffin, laureth-7 with 5% of a glukolipid of vegetable origin were 30 and 32 days respectively.*

**Keywords:** glycolic acid, cream, physicochemical stability

## 1. INTRODUCTION

Healthy skin is skin that enough moisture and oil production with no damage or skin disease. Environmental, hormones, age, diet and the presence of hereditary factors can make the skin does not always healthy. It can be seen on the skin of the face and on the skin of another. There are many kinds of facial treatments to remove dead skin cells in the skin layer. The dead skin cells need to be removed, because it is potential to cause wrinkles, fine lines or spots on the face. The dead skin can be remove by chemical peeling treatment (Wasitaatmadja, 1997).

The materials used for chemical peeling is Alpha Hydroxy Acid (AHA). Alpha Hydroxy Acid (AHA) has other advantages compared with other active ingredients. It can increase collagen content in order to rejuvenate and moisturize the skin. One of AHAs that is used for cosmetics is glycolic acid. This ingredient works by slough off the outer skin cells. After peeling, the outermost skin cells be replaced by new skin cells naturally. The result is that the skin more fresh and looks brighter (Pollick,2003)

AHA product in the market has a concentration of about 10% or be less than 10%. Concentration on the beauty clinic is between 20-30%,

and the supervision of physicians is between 40-70% (FDA, 1998).The products should be stable at the time periode which is determined (Mitsui, 1996), as well as cosmetic products. Because stability is one of the requirement for the pharmaceutical products beside of safe, effective and acceptable (USP XXVIII, 2005). Stability of the products is include chemical, physical, microbiological , pharmacological and toxicological stability (USP XXVIII, 2005).

There are two ways of testing the stability, ie stability testing at room temperature (long-term testing) and an accelerated stability testing (accelerated testing) (Agoes, 2001). Method of stability testing at room temperature takes a long time (about 1 year or more) (Martin, 1993). The stability test is used to obtain information about the stability of pharmaceutical products in order to determine shelf-life and period of use in certain packaging and storage conditions.

In this study, the physicochemical stability of the creams were tested by the of accelerated stability testing method using a climatic chamber to maintain temperature and humidity remain. The creams contained of 20% of glycolic acid using 4% of polyacrylamide, C13-14 isoparaffin, laureth-7 as thickening agent for cream gels and emulsions base and combination of 1.5% of polyacrylamide, C13-14