UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT AND MOISTURISING PROPERTIES OF PALM OIL CONTAINING AQUEOUS CREAM FOR TOPICAL DELIVERY

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ABSTRACT

Aqueous cream is a non-greasy moisturiser used to moisturize the skin. Moisturizers are the most prescribed product in dermatology which helps to sustain the skin's integrity and hydration. Due to this, it is used to treat dry skin conditions. In addition, moisturisers can reduce skin friction and sustain skin hydration by providing water directly to the skin from their water phase and occlusion properties. In this study, palm oil containing aqueous creams were formulated to see its hydrating properties in comparison to normal aqueous formulation containing liquid paraffin. Palm oil is a natural oil that possesses emollient properties due to the presence of high amounts of tocopherols and tocotrienols which will help to increase the skin hydration. Formulations containing palm oil and liquid paraffin were produced and physically characterised using LumiFuge (Stability), Mastersizer (Particle size), Texture analysis and pH meter. Efficacy studies were conducted using Corneometer (Capacitance), Tewameter (TEWL) and Visioscan. All data were analysed using IBM SPSS Statistic Data Editor to determine the significance difference between the various formulations. Based on the results obtained, the aqueous cream containing 9% palm oil is the most ideal moisturiser. This is due to the high capacitance values and lowest TEWL values as compared to the other palm oil and paraffin based formulations. When compared to the commercially available Pharmaniaga aqueous cream, it showed no significance difference in the skin capacitance values but with reduced TEWL values, which were significantly different. In conclusion aqueous cream containing 9% palm oil was superior in maintaining skin hydration than the commercially available Pharmaniaga and paraffin based aqueous creams.

CHAPTER 1

INTRODUCTION

1.1 Background

Skin is a tissue that can be subjected to high degree of oxidative stress from both endogenous and exogenous sources (Hailong Yang et al., 2009). It consists of two different layers which are epidermis and dermis. Epidermis is the outermost layer of skin that provides a waterproof barrier and produces the tone of the skin. The stratified epidermis is divided into four distinct layers which are the stratum corneum (SC), stratum spinosum (SS), stratum granulosum (SG) and stratum basale (SB). While, dermis is located beneath the epidermis which is made up of connective tissue elements, collagen, elastin, glycosaminoglycans, jointly termed the extracellular matrix (ECM) (Gopinathan K. Menon, 2002). The important function of the skin is to protect the body from unwanted influences (microbes and the elements) from the surrounding environment. The main barrier of the skin is located in the outermost layer of skin which is the stratum corneum. Because of the lipids region in the stratum corneum form only continuous structure, any substances that are applied onto the skin always have to pass these lipids regions (Joke A. Bouwstra, 2003). So, these make it become very important for the skin barrier function. Besides that, it also helps to control the body temperature and permits the sensations of touch, heat and cold.