EFFICACY STUDY OF CREAM FOR SENSITIVE SKIN WITH TRIPLE-ACTION MOISTURIZER AGENT FOR SKIN HYDRATION AND SENSITIVITY IMPROVEMENT

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ABSTRACT

Stinging, burning, itchy, and redness are the common symptoms of sensitive skin. One of the causes is weakening of skin barrier function because of poor skin moisture. Many people declare their skin is sensitive, and it's difficult for them to find suitable products. Therefore, a cream formulation containing a combination of humectant (glycerin, butylene glycol, saccharide isomerate, and hyaluronic acid), emollient (squalane and dicaprylyl carbonate), and occlusive (shea butter), was prepared as strategy for restoring skin barrier and moisture into normal condition. The study was aimed to evaluate the effect of the product on moisturizing properties, skin barrier integrity, and irritation potency. Several tests were conducted using Corneometer, Tewameter, Mexameter, and Visioscan instruments. Questionnaire also used to capture self-perception of irritation. The result shows significant improvement in skin moisturizing and skin barrier with long-lasting hydration up to 72 hours and up to 10 layers depth of epidermis. It also helps to improve smoothness as shown in the SEsm index. In a single application after 10 minutes, it showed a reduced erythema index by capsaicin inducing and irritation sign with lactic acid inducing.

OBJECTIVE

To evaluate the effect of moisturizer cream on moisturizing properties, skin barrier integrity, and irritation potency using instruments and self-assessment questionnaires.

METHOD

1. Preparation of Moisturizer Cream Sample

Combination of moisturizing agents were added into O/W cream base. The emulsion was mixed with Multimix homogenizer, resulting white opaque cream with pH around 4.5 - 5.5.

Moisturizing Agent		
humectant	Glycerin	3%
	Butylene Glycol	4%
	Saccharide Isomerate	1%
	Hyaluronic Acid	0.05%
emollient	Squalane	1%
	Dicaprylyl carbonate	5%
occlusive	Shea Butter	3%

Table 1. List of moisturizer agents used in the study

2. Efficacy Tests

A multi-center, double-blind study consists of four trials :

- **72-hour Moisturizing Study**

Once-daily use test in 35 female subjects to evaluate cream formulation for moisture retention and water barrier function benefits by Corneofix® F 20, Corneometer® CM 825, and Tewameter® TM 300 after 14 days application. Moisturizing and deep hydration properties were measured at Day 17 (3 days after last application).

- **Long-Term Efficacy Study**

Twice-daily use test in 20 female subjects to evaluate cream formulation for moisturizing and smoothness benefits by Corneometer® CM 825 and Visioscan® VC 98 after 14 days application.

- **Irritation Study (By Instrument)**

One time application study in 30 female subjects to evaluate cream formulation for irritation potential by Mexameter® MX 18. The skin irritation was induced by capsaicin and erythema index was measured before, 3, and 10 minutes after product application.

- **Irritation Study (By Self-Perception)**

One time application study in 20 female subjects to evaluate cream formulation for irritation potential by self-assessment questionnaire. The skin irritation was induced by 10% lactic acid and the questions were asked immediately, 5, 10, and 15 minutes after application.

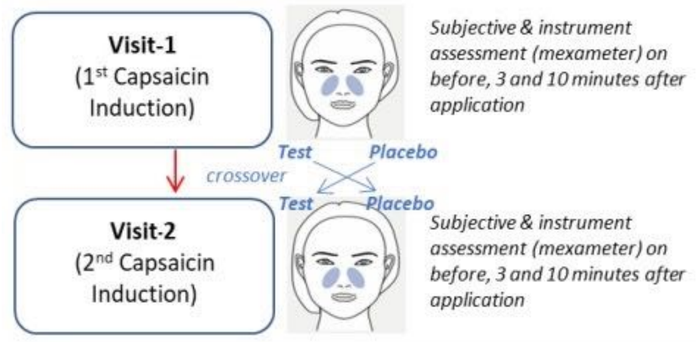


Figure 1. Irritation study procedure

RESULTS

Cream formulation shows significant improvement in skin moisturizing and skin barrier with long-lasting hydration up to 72 hours and up to 10 layers depth of epidermis. It also helps to improve smoothness as shown in the SEsm index. In a single application after 10 minutes, it showed a reduced erythema index by capsaicin inducing and irritation sign with lactic acid inducing.

72-hour Moisturizing Effect

Post tape stripping (0,3,6, and 10 strips) a significant reduction was noted in water loss and skin hydration at day 15 (post 2 weeks of regular product use), and day 17 (72 hours post use of test product) when compared to baseline

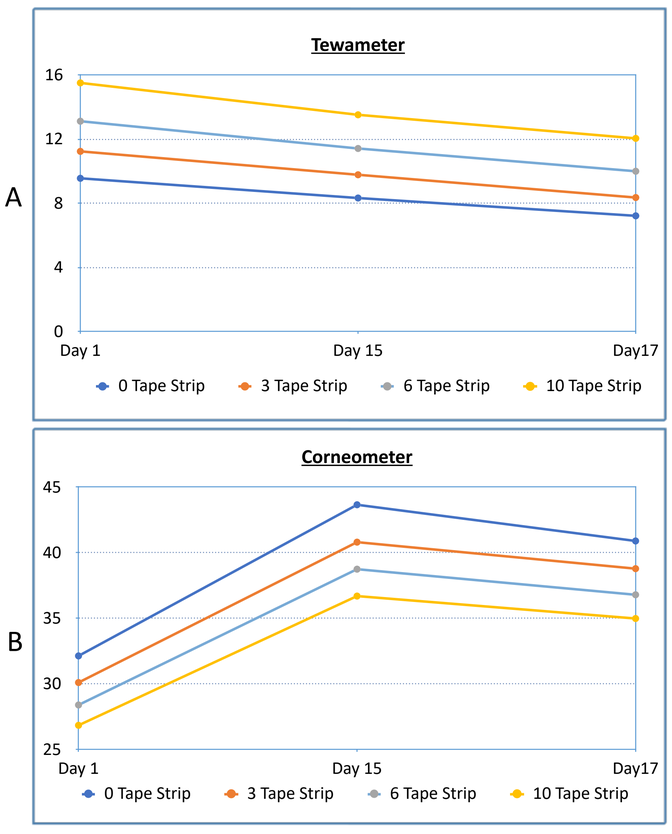


Figure 2. Result of 72 hours Moisturizing study (A) Tewameter (B) Corneometer.

Long-Term Efficacy

Improvement of skin smoothness showed by reduction of 18.31% SEsm index and skin hydration improved 12.38% as measured by corneometer

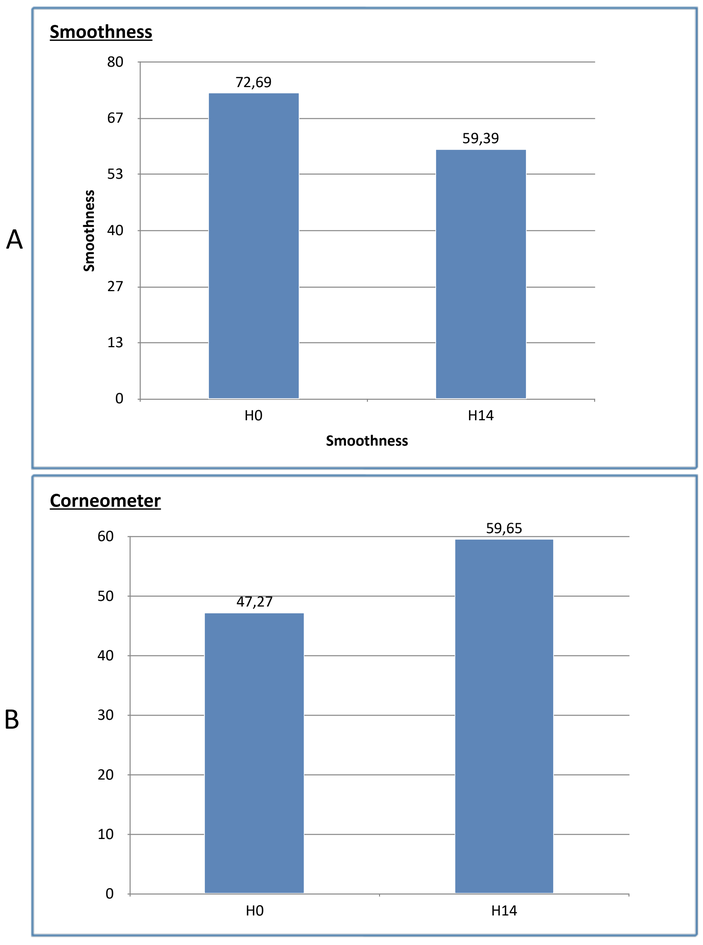


Figure 3. Long-Term Efficacy Result (A) Smoothness (B) Corneometer

Irritation Reduction

There is no increase in Erythema index on the skin induced by capsaicin, after 10 minutes applied with moisturizer cream.

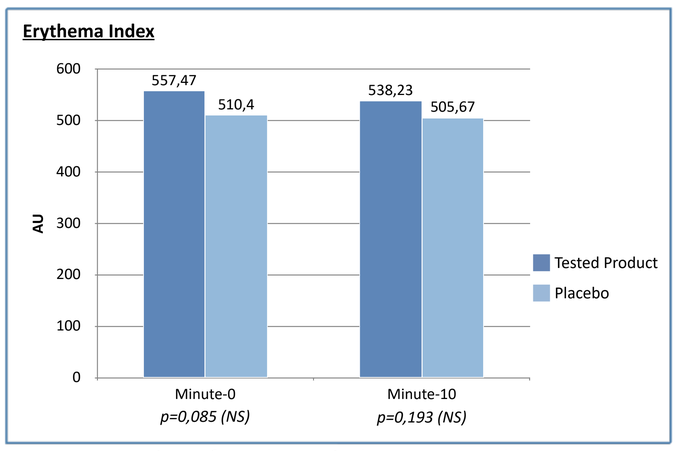


Figure 4. Reduction of erythema index, measured by Mexameter

Subjects' perception about reduction of skin sensitivity signs (stinging, burning, itchy) caused by Lactic Acid induction, after using the moisturizer cream.

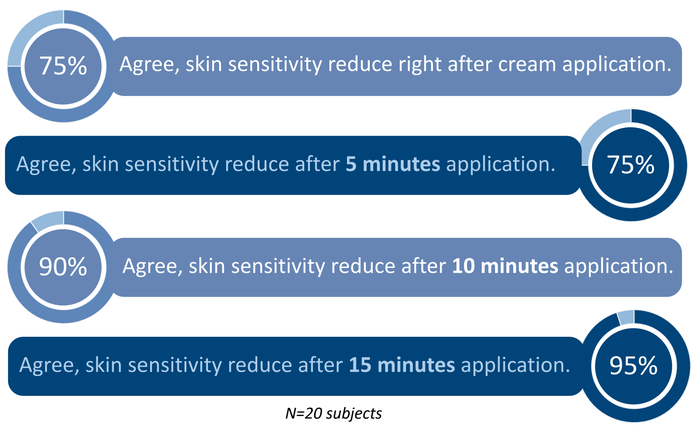


Figure 5. Self-perception of the subjects after applying cream

CONCLUSION

Symptoms of sensitive skin could be reduced by improving skin barrier strength, which can be achieved with moisturizer therapy. Combination of humectant, occlusive agent, and emollient was shown to increase skin hydration, improve skin smoothness, and moreover can give long lasting moisture. Combination of three of them is the best choice, because humectant alone can cause excessive water loss from the dermis through evaporation into the environment with lower humidity, so it needs to combine it with an occlusive agent. Moreover, addition of emollient can help improve the texture and appearance of the skin by filling the gaps between the corneocytes, improving the lubricity, and restoring the epidermal lipids. The study showed that a product with triple action moisturizer can increase skin moisture and improve skin barrier integrity. Subjects with improved skin moisture have exhibited reduction in skin sensitivity from Lactic Acid and Capsaicin induction.