

Tradename: AC Retinol Liposome OS

Code: 60184

CAS#: 65381-09-1 & 123465-35-0 & 68-26-8

Test Request Form #: 10056

Lot #: 9392040

Sponsor: *Active Concepts, LLC; 107 Technology Drive Lincolnton, NC 28092*

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Principle Investigator: *Hannah Duckett*

Test Performed:

Cellular Renewal Assay

Introduction

AC Retinol Liposome OS was evaluated for its ability to accelerate cell renewal by means of a traditional skin pigmentation assay protocol.

Skin cells are frequently exposed to ultraviolet light damage and other chemical and environmental aggregates. Their death and replacement through cellular renewal processes minimize the potential longer-term harmful effects of these exposures. Aiding in the processes of cellular renewal can improve the skin's physical appearance as well as function as a protective barrier.

Dermal Dye Max™ was used to induce skin pigmentation. The active ingredient in Dermal Dye Max™ is dihydroxyacetone (DHA), also known as glycerone, and is a simple saccharide.

Materials

- A. Equipment:** DermaLab Skin Combo (Pigmentation Probe); Pipettes
- B. Reagents:** Dermal Dye Max™ (Alpine Valley Naturals); Cetaphil Moisturizing for All Skin Types (base lotion); Non-Encapsulated Retinol Solution 10% (N230403B) (positive control)

Methods

Female volunteers between the ages of 20 and 45 and who were known to be free of any skin pathologies and had Fitzpatrick skin types II participated in this study (Table 1). Derma Dye Max™ was applied to four identified test patches on the volar forearm. The dye was left to develop for 24 hours prior to baseline readings. A fifth skin patch was identified as the skin baseline control and no dye nor treatment were applied to this site. Post dye development and prior to the initial application, baseline DermaLab pigmentation index readings were taken for all five identified sites.

Approximately 0.2 g of each lotion treatment, 3.0% Non-Encapsulated Retinol Solution 10% positive control, 3.0% **AC Retinol Liposome OS**, and the base formula were applied to three 2cm x 2cm respective locations on the volar forearm. All lotion formulations and the base control were adjusted to a direct pH of 5.0 – 5.5 (Table 2). The fourth test site was left untreated as a dye baseline test site. Readings were taken every 24 hours until the active test site returned to baseline. After each daily reading, treatment of each respective test site was performed following the same parameters listed above.

Table 1. The Fitzpatrick Classification of Skin Types Chart¹

Fitzpatrick Skin Type Descriptions*	
Skin Type	Description
I	Always burns, never tans
II	Burns easily, tans minimally
III	Burns moderately, tans to light brown
IV	Burns minimally, tans to moderate brown
V	Rarely burns, tans to dark
VI	Never burns, least sensitive to changes

*Adapted from The Surgeon General's Call to Action to Prevent Skin Cancer

Table 2. pH Readings of Each Test Material

Lotion Sample	pH
3.0% Non-Encapsulated Retinol Solution 10%	5.38
3.0% AC Retinol Liposome OS	5.46
Base Lotion Control	5.39

Results

AC Retinol Liposome OS was able to return the test site to baseline pigmentation readings in four days.

Pigmentation percent change was calculated for all four dye location test site readings for each respective day, using the equation below.

$$\text{Percent (\%) Change} = \frac{\text{Pigmentation Index}_{\text{Sample Site}} - \text{Pigmentation Index}_{\text{Skin Control Site}}}{\text{Pigmentation Index}_{\text{Skin Control Site}}} \times 100$$

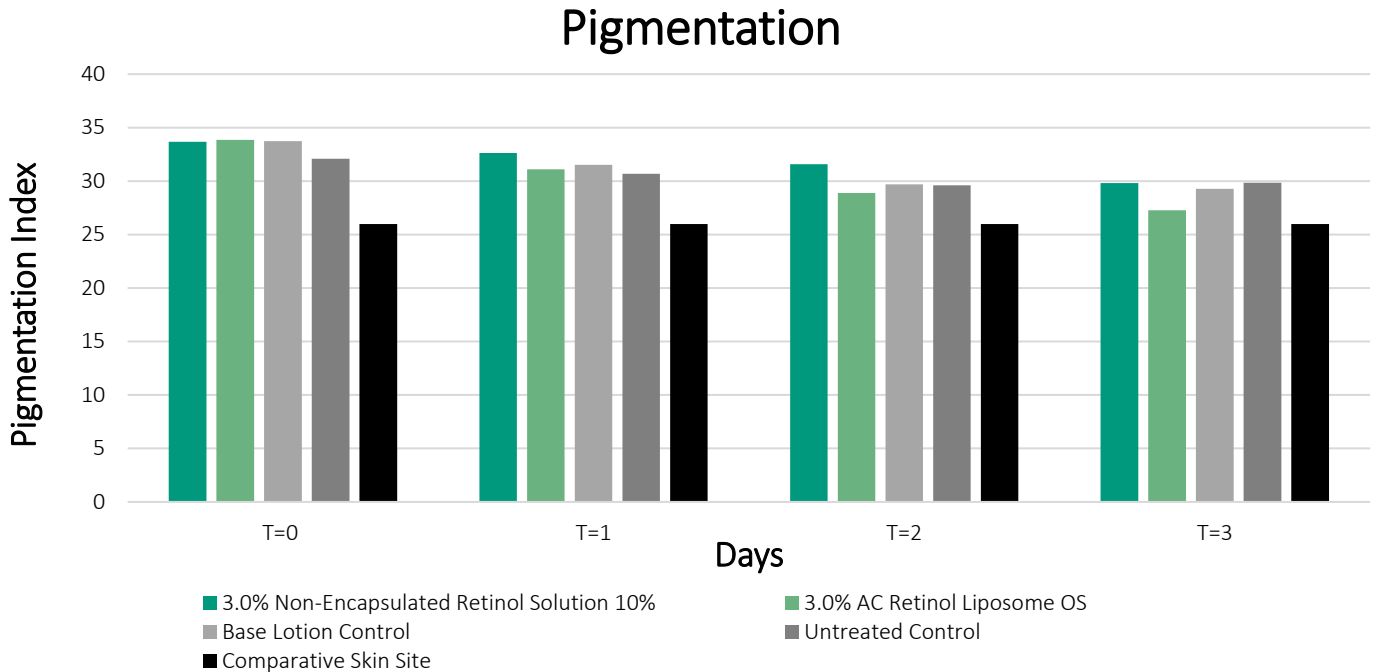


Figure 1: Pigmentation Index Readings

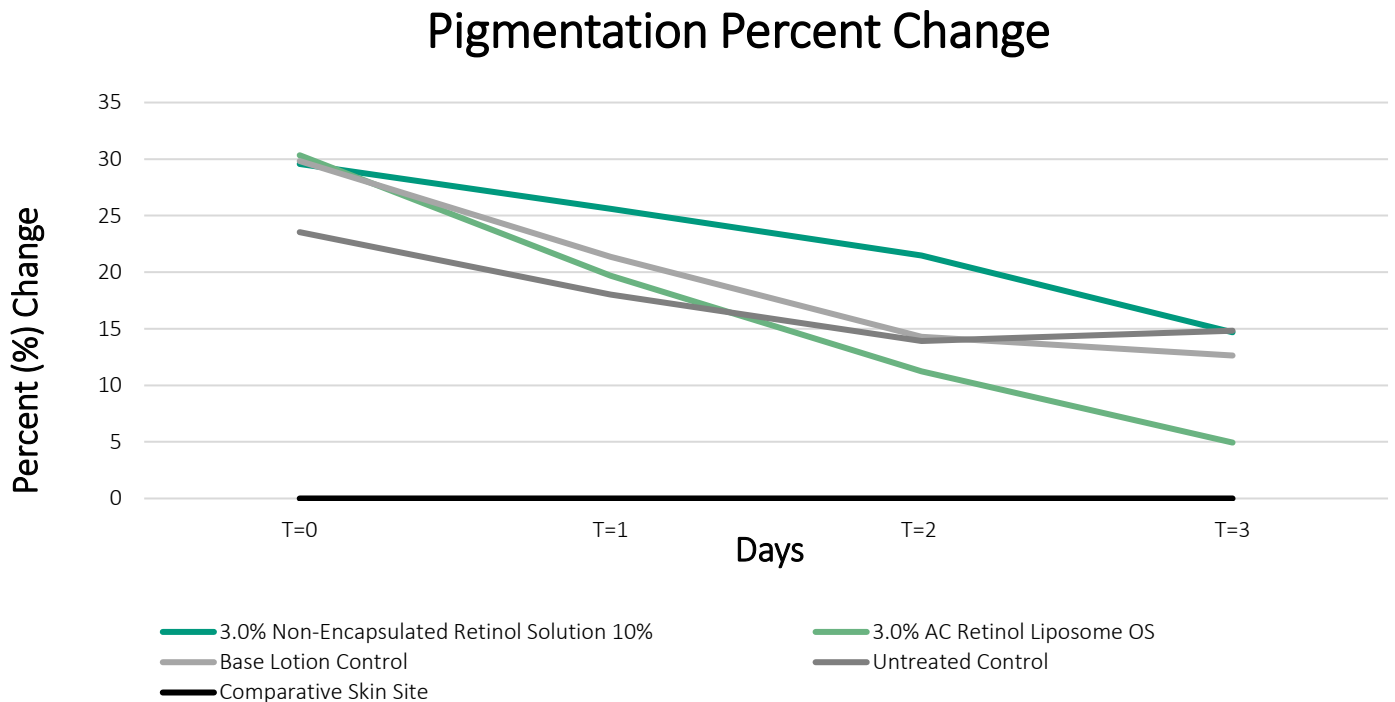


Figure 2: Percent Change in Pigmentation

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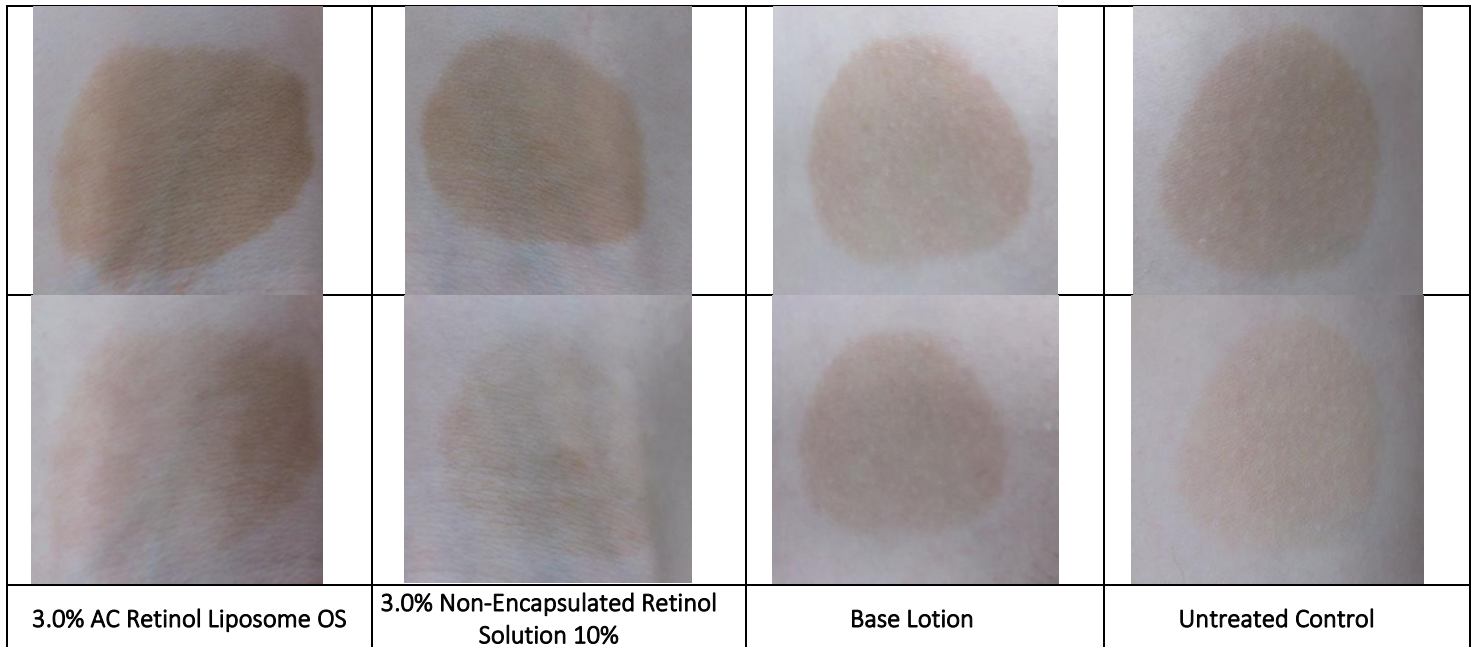


Figure 3. Participant Images of Each Test Patch at Baseline (Top) and After Four Days (Bottom)

Discussion:

The results indicate that **AC Retinol Liposome OS** is capable of increasing cellular renewal when compared to the untreated skin dye control site. Cellular renewal is beneficial for visibly improving skin tone and texture as well as aiding in the skin's function as a protective barrier from harmful chemical and environmental exposure that can lead to premature aging.

As seen in Figure 2, **AC Retinol Liposome OS** had the greatest percent change reduction back to baseline when compared to all other test controls. **AC Retinol Liposome OS** outperformed the Non-Encapsulated Retinol Solution 10% positive control in the induction of cellular renewal and was able to return skin to the untreated baseline pigmentation readings. **AC Retinol Liposome OS** induced a 95.1% change in pigmentation over the course of four days compared to the Non-Encapsulated Retinol Solution 10% positive control, which induced an 85.3% change in pigmentation. Visually, **AC Retinol Liposome OS** performed better than the positive control and base lotion after four days as seen in Figure 3. It can therefore be concluded that at normal use concentrations, **AC Retinol Liposome OS** contributes to cellular renewal, indicating a healthier, more vibrant skin tone and helping to reverse the signs of aging.

References

1. Sharma AN, Patel BC. Laser Fitzpatrick Skin Type Recommendations. [Updated 2022 Mar 9]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK557626/>