



functional active botanical alternative to petrolatum and lanolin barrier protection, intense moisturization, sustainable hair + skin care, super fruit Nourishing

BACKGROUND

Pomegranates may be one of the oldest medicines known to man, its use going back perhaps as far as 8000 years. Originating in the area ranging from Persia to Northern India this fruit has been cultivated throughout the Mediterranean since ancient times. The genus name comes from Punica the Roman name for Carthage; the original source for the Italian peninsula. Today, pomegranate is widely cultivated in California and Mexico and offers applications in food, beverage, agriculture, and beauty industries.

Known as a super fruit in the food industry, pomegranates offer consumer recognizable materials for cosmetic applications. Rich in nutrients, pomegranates speak to the consumer's desire for natural, botanical materials capable of nourishing and rejuvenating the complexion. Traditionally, extracts from pomegranate have been used for hydrating applications to keep the skin, scalp, and hair healthy. **ABS Pomegranate Sterols** offers a functional active capable of moisturization and improving barrier function.

SCIENCE

With the advent of modern analytical techniques capable of closely studying lipids it seems that many of the benefits of pomegranates may actually be based on its oils. Pomegranate is a natural source of conjugated linolenic acid which has been shown to increase lipid metabolism. Additional research has shown that pomegranate seed oil is rich in conjugated linolenic acid and is capable of reducing the occurrences of certain types of cancer and skin conditions.

Sustainably manufactured, Active Concepts extracts the material from lipid fractions of the unused pomegranate pericarp and seeds. **ABS Pomegranate Sterols** are derived from cold pressing the seeds for oil. The oil is then fractionated and the sterols are removed. Sterols are useful for increasing barrier formation on the skin while also improving hydration. Optimizing sustainable manufacturing, Active Concepts focuses to minimize waste utilizing a cradle to cradle approach in the creation of materials such as **ABS Pomegranate Sterols**.

Code Number: 10247

INCI Name: Punica Granatum Sterols INCI Status: Approved REACH Status: Compliant CAS Number: 949109-75-5 EINECS Number: N/A

Origin: Botanical **Processing**: **GMO** Free No Ethoxylation No Irradiation No Sulphonation Additives: Preservatives: None Antioxidants: None Other additives: None Solvents Used: N/A **Appearance**: White to Very Light Yellow Waxy Paste Soluble/ Miscible: Oil Soluble **Ecological Information**: 88.70% Biodegradability Microbial Count: < 100CFU/g No Pathogens

Suggested Use Levels: 0.5 – 5.0% Suggested Applications: Improved Barrier Function, Moisturization

Benefits of ABS Pomegranate Sterols:

- Functional Active
- Intense Moisturizing Benefits
- Perceivable Sensorial Attributes
- Improved Barrier Function
- Hair and Skin Care Applications



BENEFITS

This super fruit ingredient can be used as a natural replacement for synthetic materials such as petrolatum and animal-derived materials, like lanolin. **ABS Pomegranate Sterols** is capable of increasing moisture levels on the skin while enhancing the skin's barrier function to protect against environmental stress responsible for extrinsic again.

As we know, many of the oils extracted from pomegranates are beneficial skin, scalp, and hair care ingredients. The combined benefits, compliments of pomegranate's essential fatty acid content and the known antioxidant properties, make **ABS Pomegranate Sterols** a one-two punch, perfectly designed by nature to quench our skin while providing protection.

EFFICACY

The Hydration Potential (Figure 1) was measured according to the British Pharmacopoeia (BP) water absorption capacity method. The process involves dripping water into a sample in a mortar and mixing well at room temperature. When no more water can be mixed into the emulsion, the sample is at the terminal point. Water Holding Capability (%) = (Amount of Water contained / Sample weight) x 100. **ABS Pomegranate Sterols** is



Hydration Potential

Figure 1. Increase in skin hydration when incorporating ABS Pomegranate Sterols.

In order to measure the ability to increase barrier function (Figure 2) a mixture of Sample Oil and Mineral Oil 70 (1:1) was applied on a filter paper, and the filter paper was placed on top of a measurement cup containing CaCl₂ solution. After standing for 24 hours at 25°C with 95%RH, the weight of the moisture that permeated through the filter paper was measured as increased weight . The Coefficient of Permeability was shown in percentage by comparing the weight increase with one in the case in which any oils were not applied. The higher the coefficient the less able the material is to increase barrier function.



Coefficient of Permeability

Figure 2. Increase in barrier function shown as an inverse relationship to the coefficcient of permeability.



An *in-vivo* Moisturization Assay was conducted to evaluate the ability of 5.0% **ABS Pomegranate Sterols** to improve moisturization in the skin after use. Observed changes in epidermal hydration are often quantified by measuring changes in electrical conductance of the stratum corneum via impedance measurements. A DPM 9003 NOVA Impedance meter was used to observe improvements in moisturization following treatment with **ABS Pomegranate Sterols**. Results indicate compared to the base lotion and the untreated control, **ABS Pomegranate Sterols** improved moisturization levels in the skin after use.



Comparitive Changes in Hydration

An *in-vivo* High Resolution Ultrasound Imaging Assay was conducted over a period of four weeks to evaluate the effect of utilizing **ABS Pomegranate Sterols** on skin density. 10 M/F individuals participated in the study. The results indicate that **ABS Pomegranate Sterols** is capable of improving skin density compared to the control.

High Resolution Ultrasound Skin imaging is based on measuring the acoustic response after an acoustic pulse is sent into the skin. The energy of the acoustic pulse is low and will not affect the skin in any way. When the acoustic pulse is emitted and hits different areas of the skin, part of the pulse will be reflected and part will be transmitted further into the skin. The reflected signal travels back and is picked up by the ultrasound transducer. After processing the signal, a cross-sectional image appears on the screen. This image represents an intensity, or amplitude, analysis of the signals.

Following initial measurements, all subjects were asked to apply 2 mg of each test material on their volar forearms. Measurements were taken immediately after application of test materials and then weekly for 4 weeks. The test material consisted of 2.0% **ABS Pomegranate Sterols** in a base lotion.



Comparative Difference in Skin Density

Figure 4. Difference in skin density results utilizing ABS Pomegranate Sterols.

Figure 3. Percent improvement in hydration properties.

An *in-vivo* salon half head study was conducted to determine the comparison of a control shampoo vs. 2.0% **ABS Pomegranate Sterols** in the control shampoo. Additionally, a comparison between the control conditioner and 2.0% **ABS Pomegranate Sterols** in the control conditioner were reported. Each volunteer's hair was photographed prior to the treatment and again after the shampoo and conditioner had been applied and the hair was styled. The images of the half head study were used in conjunction with a sensory assessment subjectively rating the parameters - cleansing, smoothing, dry and wet combability, anti-frizz, overall feel, shine and hydration. This assessment was conducted both before and after treatment. Based on the results obtained, **ABS Pomegranate Sterols** is capable of enhancing cleansing, smoothing, wet and dry combability, anti-frizz, overall feel, shine and hydration of the hair. These attributes makes it an ideal ingredient for use in products intended for all hair types.







Figure 6. Full head Baseline, Untreated Hair.



Figure 7. Half Head Treated.

References:

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