ABS Acai Sterols EFA Efficacy Data

Code: 10414
INCI Name: Euterpe Oleracea Sterols & Linoleic Acid & Oleic Acid & Linolenic Acid
CAS #: 68990-51-2 & 60-33-3 & 112-80-1 & 463-40-1
EINECS #: 273-605-2 & 200-470-9 & 204-007-1 & 207-334-8

Name of Study	Results
Sensory Assessment of Formulations	A shampoo containing **ABS Acai Sterols EFA** provided rich and creamy foam, and it gave a smooth, moist, and supple result, compared to a shampoo containing Lanolin which gave poor foam and made the hair feel "squeaky" while rinsing. The conditioning treatment containing **ABS Acai Sterols EFA** also provided a silky smooth, moist, and supple feeling, while Lanolin made the hair feel heavy. **ABS Acai Sterols EFA** in the hair cream and wax had good affinity, gave moisture, smoothness, gloss, and a natural styling ability. **ABS Acai Sterols** is ideal as a moisturizer and hydrator in hair products.
Salon Half Head Study	The results of the assessment indicate that when incorporated into a shampoo, 2.0% **ABS Acai Sterols EFA** did show improvement in the parameters tested. However, when used in a conditioner **ABS Acai Sterols EFA** is capable of improving smoothing, anti-frizz, overall feel, shine and hydration more than the control conditioner.
Hydration Potential Assay	The results indicate that **ABS Acai Sterols EFA** s is an excellent all natural and botanical alternative to Lanolin as it is capable of holding 200% of its weight in water. Data analysis also reveals that compared to Avocado Sterols, Petrolatum, and Jojoba Oil, **ABS Acai Sterols EFA** exhibited superior hydration potential with respective improvements in water holding capacity of 60%, 900% and 3900%.

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Coefficient of Permeability	A higher number for the Coefficient of Permeability means that more liquid was able to seep through into the solution, and thus a lower barrier function. **ABS Acai Sterols EFA** has a lower Coefficient of Permeability than Dimethicone, Triethylhexanoin, Mineral Oil, and Lanolin, meaning **ABS Acai Sterols EFA** is better for protecting against Transepidermal Water Loss.

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Sensory Assessment of Formulations
ABS Acai Sterols EFA

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Abstract

ABS Acai Sterols EFA is an oligomer type Phytosterol ester in a paste that melts at ~38°C.

The feature characteristics of **ABS Acai Sterols** are as follows:
Hydration Potential – Promotes excellent emollient and moisturized sensation so that it maintains healthy hair and repairs damaged hair.
High Refractive Index – Excellent shine and gloss.
Excellent Oxidation Stability – Durable in storage.
High Pigment Dispersing Ability – Great in skincare and makeup products.

Materials and Methods

We created the following formulations to test the feature characteristics of **ABS Acai Sterols EFA**:
Shampoo – Gives creamy and rich foam to shampoo. Provides smooth and supple feel to hair. Also useful in 2-in-1 Shampoo.
Conditioning Treatment – Restores smoothness, moisture, and suppleness to hair.
Cream – Affinitive to hair and gives shine, smoothness, and moisture without a sticky feeling.
Wax – Affinitive to hair and gives smoothness and moisture, and provides a natural styling ability without a sticky feeling.

Sensory Assessment:
Volunteers were asked to use each of the aforementioned formulations once a day for 5 days (not in conjunction), and their sensory assessments were evaluated on a scale of 1-10 (10 being the most desirable quality, 1 being the least desirable quality).

Results

Shampoo

Washing and Rinsing	ABS Acai Sterols EFA 1.0%	Lanolin 1.0%	After Drying	ABS Acai Sterols EFA 1.0%	Lanolin 1.0%
Smoothness	7.1	4.6	Smoothness	7.2	2.9
Rich and Creamy Foam	7.5	6.0	Moisture	7.1	3.3
Suppleness	7.1	5.1	Suppleness	6.4	4.7
Residual Feeling	7.0	4.9	Manageability	5.3	4.5

Sensory Assessment of Formulations
ABS Acai Sterols EFA

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Conditioning Treatment

Washing and Rinsing	ABS Acai Sterols EFA 1.0%	Lanolin 1.0%	After Drying	ABS Acai Sterols EFA 1.0%	Lanolin 1.0%
Smoothness	9.5	2.5	Smoothness	7.9	2.6
Rich and Creamy Foam	7.8	3.1	Moisture	6.9	4.0
Suppleness	8.0	2.9	Suppleness	6.2	4.7
Residual Feeling	9.4	2.2	Manage-ability	7.6	4.9
Moisture	7.6	3.0	Moisture	7.7	4.8

Cream

	ABS Acai Sterols EFA 2.0%	Lanolin 2.0%
Smoothness	7.6	2.9
Affinity	7.4	4.3
Moisture	7.8	4.0
Lightness	7.1	4.4

Wax

	ABS Acai Sterols EFA 4.0%	Lanolin 4.0%
Affinity	7.4	2.7
Adhesiveness	7.8	4.8
Styling	7.8	2.6
Lightness	6.9	3.0
Smoothness	8.0	4.5
Moisture	8.1	4.1
Stickiness	7.0	2.8

Discussion

According to the sensory assessment by the volunteers, the shampoo containing **ABS Acai Sterols EFA** provided rich and creamy foam, and it gave a smooth, moist, and supple result, while the shampoo containing Lanolin gave poor foam and made the hair feel "squeaky" while rinsing. The conditioning treatment containing **ABS Acai Sterols EFA** also provided a silky smooth, moist, and supple feeling, while Lanolin made the hair feel heavy. **ABS Acai Sterols**

EFA in the hair cream and wax had good affinity, gave moisture, smoothness, gloss, and a natural styling ability, while Lanolin again created a heavy feeling. Thus we feel this provides sufficient evidence by consumer opinion that **ABS Acai Sterols EFA** is a better substitute than Lanolin as a moisturizer and hydrator in hair products, as it leaves the consumer with a healthy, smooth feeling.

Version#1/02.21.15

Salon Half-Head Hair Study

functional active
botanical replacement of both
petrolatum and lanolin
barrier protection,
intense moisturization, sustainable
standardized for EFAs, super fruit

ABSTRACT

The condition of the cuticle (the outer most layer of the hair) significantly affects both the manageability and sleekness of our hair. Overtime, hair can become damaged, which can result in the cuticle lifting because of both environmental and styling influences and processes. The result: lifeless, dull hair that is difficult to manage. Improving the sleekness of hair has been shown to instantly create a healthier more youthful appearance. Increasing combability not only eases manageability, but also helps to minimize physical damage that perpetuates the loss of body and difficulty in styling.

ABS Acai Sterols EFA is a product designed to provide soothing and hydration benefits to the skin and hair. However, this unique ingredient also enhances smoothing, anti-frizz, overall feel, shine and hydration when used in hair care applications. The purpose of this study was to confirm whether **ABS Acai Sterols EFA** is capable of providing benefits when included in a shampoo and conditioner on ethnic hair types.

A half head study was conducted to determine the comparison of a control shampoo vs. 2.0% **ABS Acai Sterols EFA** in the control shampoo. Additionally, a comparison between the control conditioner and 2.0% **ABS Acai Sterols EFA** 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 Acai Sterols EFA** is capable of enhancing the smoothing, anti-frizz, overall feel, shine and hydration, making it an ideal ingredient for use in products intended for thick, unruly or ethnic hair types.

Code Number: 10414

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INCI Status: Approved
REACH Status: Complies
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EINCS Number: 273-605-2 & 200-470-9 & 204-007-1 & 207-334-8

TRF#: S15
Lot Number(s):
NC 150410- H, NC 150410- I

Suggested Use Levels: 1.0 - 10.0%
Use Level for Assay: 2.0%

Sponsor:
Active Concepts, LLC
107 Technology Drive
Lincolnton, North Carolina 28092

Study Director: Erica Segura
Principle Investigator:
Maureen Danaher

Suggested Applications: Soothing, Moisturization, Anti-Frizz, Hydration

Benefits of **ABS Acai Sterols EFA:**

- Functional Active
- Intense Moisturization
- Standardized for Essential Fatty Acids
- Perceivable Sensorial Attributes

Salon Half-Head Hair Study

MATERIALS AND METHODS

The study was conducted using five participants. Each subject had their baseline photo taken prior to having their hair washed. The participant was also asked to complete a survey rating their hair prior to treatment on a scale of 1 to 10, with 1 being the lowest and 10 being the highest, using the following parameters cleansing, smoothing, dry and wet combability, anti-frizz, overall feel, shine and hydration.

Half of the head was treated with the control shampoo and conditioner while the other half of the head was treated with 2.0% **ABS Acai Sterols EFA** in the base shampoo and base conditioner. After the application and rinse of the test and positive control products, each participant's hair was blown dry using a round brush on both sides of the head. Once the hair was completely dry, the participant was asked to again assess the same parameters of both halves of their hair. Assessments were made using a rubric from 1 to 10, with 1 being the lowest and 10 being the highest.

RESULTS

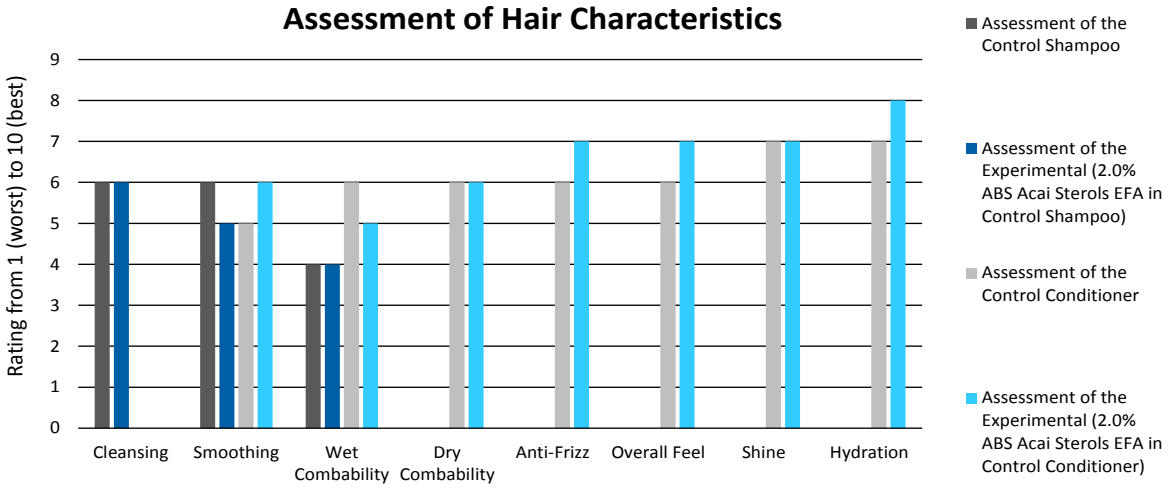
Parameters Tested	Assessment of the Control Shampoo	Assessment of the Experimental (2.0% ABS Acai Sterols EFA in Control Shampoo)	Assessment of the Control Conditioner	Assessment of the Experimental (2.0% ABS Acai Sterols EFA in Control Conditioner)
Cleansing	6.00	5.80	X	X
Smoothing	6.00	7.40	6.00	7.60
Wet Combability	5.20	6.60	5.60	7.60
Dry Combability	X	X	6.60	8.00
Anti-Frizz	X	X	6.00	9.00
Overall Feel	X	X	5.80	8.80
Shine	X	X	6.60	9.20
Hydration	X	X	6.40	9.20
Mean	5.73	6.60	6.14	8.48

Chart 1. Average Results for Participant's Sensory Assessment

Parameters Tested	Percent Difference – Comparison of Control Shampoo vs. Experimental (2.0% ABS Acai Sterols EFA in Control Shampoo)	Percent Difference – Comparison of Control Conditioner vs. Experimental (2.0% ABS Acai Sterols EFA in Control Conditioner)
Cleansing	0%	X
Smoothing	15%	29%
Wet Combability	33%	29%
Dry Combability	X	15%
Anti-Frizz	X	40%
Overall Feel	X	40%
Shine	X	25%
Hydration	X	40%
Mean	16%	31%

Chart 2. Percent Difference of Participant's Sensory Assessment

Salon Half-Head Hair Study



Graph 1. Rating of hair characteristics following sensory assessment

Figure 1. Full head Baseline, Untreated Hair

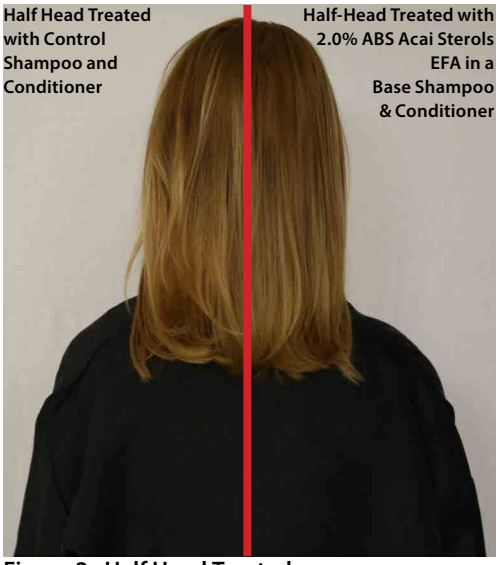


Figure 2. Half Head Treated

Figure 3. Full head Baseline, Untreated Hair

Figure 4. Half Head Treated

Salon Half-Head Hair Study

Figure 5. Full head Baseline, Untreated Hair

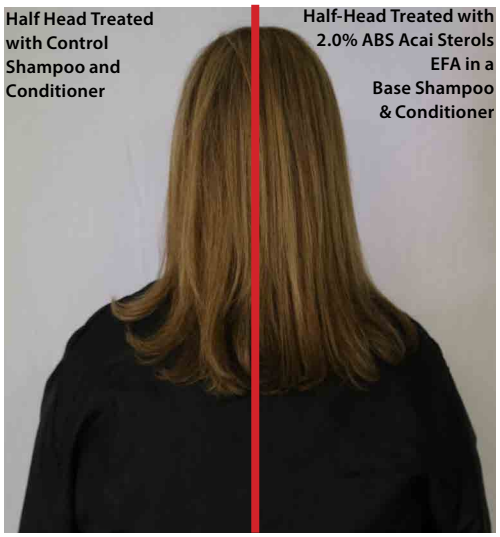


Figure 6. Half Head Treated

Figure 7. Full head Baseline, Untreated Hair

Figure 8. Half Head Treated

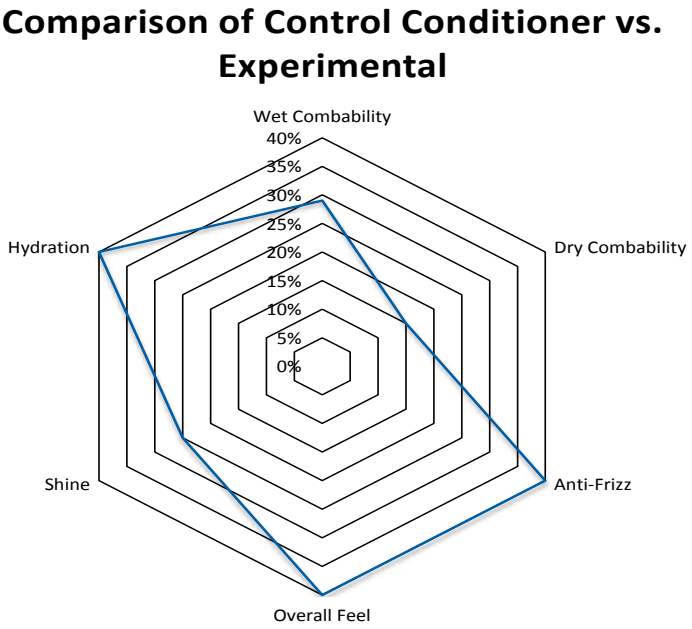
Figure 9. Full head Baseline, Untreated Hair

Figure 10. Half Head Treated

Salon Half-Head Hair Study

When comparing hair characteristics of the baseline assessments to the post style assessments, the benefits of including 2.0% **ABS Acai Sterols EFA** in a conditioner are even more apparent. In relation to the baseline readings, the test-half of the head improved the intended subjective parameters, improving smoothing, anti-frizz, overall feel, shine and hydration by 29%, 40%, 40%, 25% and 40% ,respectively. It is clear from the images in this study that **ABS Acai Sterols EFA** helps create a smooth, sleek hairstyle. Additionally, in all images, the hair is less frizzy and has a more hydrated appearance.

The professional stylist who performed the actual tests by applying the product, styling the hair and documenting the images said **ABS Acai Sterols EFA** is great for smoothing frizzy, unruly hair. This product can tame the hair while enhancing the shine and overall feel of styled hair. The product is good for damaged and/or unruly hair. **ABS Acai Sterols EFA** can be used in a leave on application or conditioner for perceivable benefits.



Graph 2. Hair Assessment results for sensory characteristics

DISCUSSION

The results of the assessment indicate that when incorporated into a shampoo, 2.0% **ABS Acai Sterols EFA** did show improvement in the parameters tested. However, when used in a conditioner **ABS Acai Sterols EFA** is capable of improving smoothing, anti-frizz, overall feel, shine and hydration more than the control conditioner. These results can be further supported by figures 1 through 10, where clearly the half of the subject's head treated with 2.0% **ABS Acai Sterols EFA** appears shiny, smooth, less frizzy and hydrated. Additionally, the subjects reported a significant increase in hydration and overall feel of the hair.

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Hydration Potential
ABS Acai Sterols EFA

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Abstract

The purpose of this study was to determine the hydration potential of **ABS Acai Sterols EFA** in comparison to some of its natural, synthetic, and animal-derived competitors.

Materials and Methods

Hydration Potential was measured according to the British Pharmacopoeia (BP) water absorption capacity method. Following this procedure, sample materials were placed separately into a mortar. Water was then incrementally added to the sample and mixed using a pestle. Samples were considered to be saturated when no more water can be mixed into the emulsion. The point at which a sample is fully saturated is referred to as the terminal point. The water holding capacity was then calculated by dividing the weight of the sample after the terminal point has be reached by the initial sample weight and multiplying by 100 as is indicated in the below equation.

Water Holding Capacity (%) = (Weight of sample after terminal point is reached/Weight of Initial Sample) x 100

Results

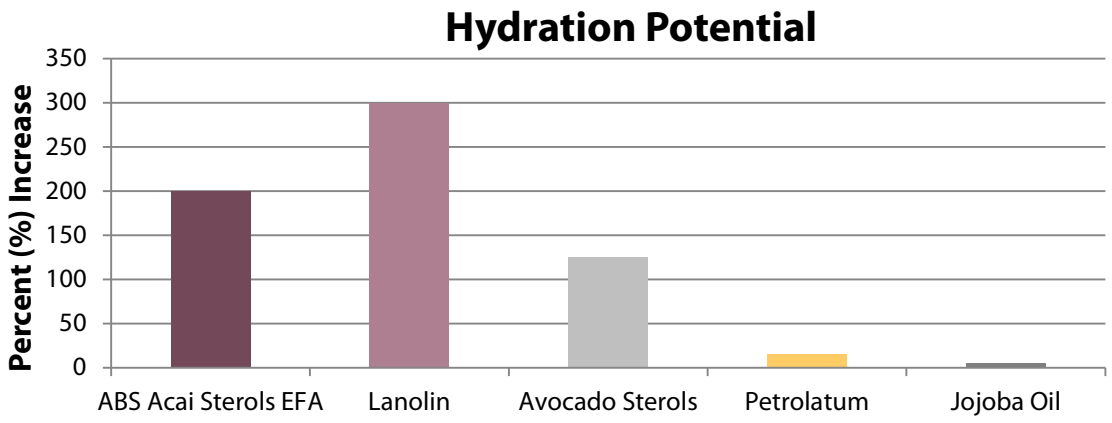

Figure 1. Hydration Potential Results

Discussion

The results indicate that **ABS Acai Sterols EFA** is an excellent all natural and botanical alternative to Lanolin as it is capable of holding 200% of its weight in water. Data analysis also reveals that compared to Avocado Sterols, Petrolatum, and Jojoba Oil, **ABS Acai Sterols EFA** exhibited superior hydration potential with respective improvements in water holding capacity of 60%, 900% and 3900%. These findings confirm that **ABS Acai Sterols EFA** is useful in topical applications to effectively deliver moisture to the skin.

Coefficient of Permeability
ABS Acai Sterols EFA

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Abstract

The purpose of this study was to determine the ability of **ABS Acai Sterols EFA** to increase barrier function and reduce the coefficient of permeability of hydration through a membrane.

Materials and Methods

The sample oil and Mineral Oil 70 were mixed together in a 1:1 ratio. This mixture was applied to filter paper, which was then placed on top of a measurement cup containing CaCl2 solution. These were allowed to stand for 24 hours at 25°C with 95% RH, and the weight of the moisture that permeated through the filter paper and into the solution was measured as increased weight. The Coefficient of Permeability was shown in percentage by comparing increase in weight to a control where no oils were applied.

Results

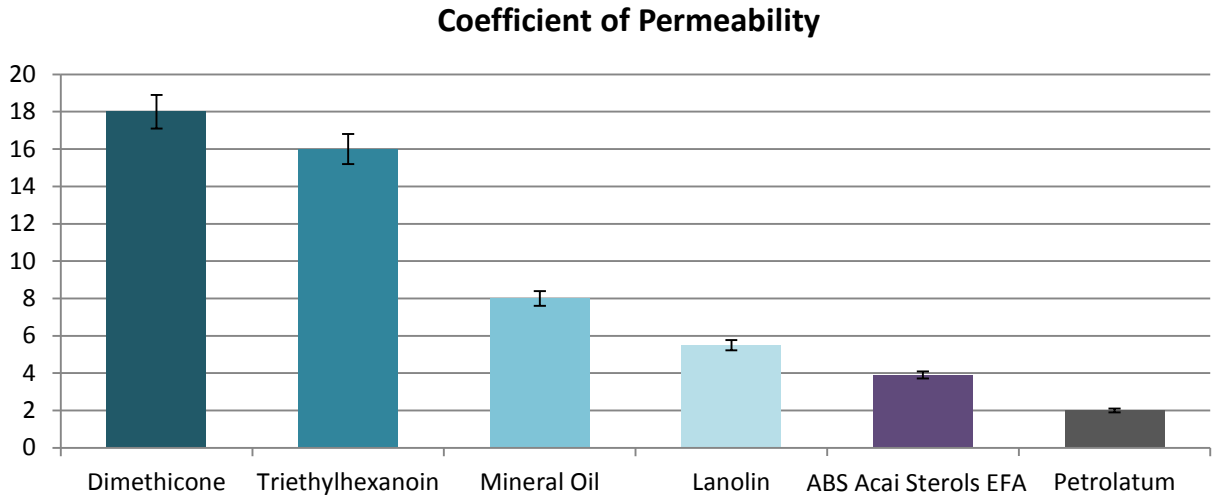

Figure 1. Coefficient of Permeability Measurements

Discussion

A higher number for the Coefficient of Permeability means that more liquid was able to seep through into the solution, and thus a lower barrier function. According to figure 1, **ABS Acai Sterols EFA** has a lower Coefficient of Permeability than Dimethicone, Triethylhexanoin, Mineral Oil, and Lanolin, which means that **ABS Acai Sterols EFA** provides better barrier function than all of these products, as it does not allow for moisture loss.