

Tradename: AcquaSeal® Coconut

Code: 20742

CAS #: 8001-31-8

Test Request Form #: 792

Lot #: NC141117-C & NC141117-D

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

Study Director: Erica Batounis

Principal Investigators: Meghan Darley

Test Performed:

Salon Half-Head Study

Introduction

Hair appearance is reflective of an individual's self-esteem, mental-image, and well-being. The condition of an individual's hair significantly impacts how one views themselves as it relates to their physical appearance. Additionally, hair is often the initial feature that others observe about one's appearance. The vibrance and condition of hair is indicative of how another individual may perceive personality and self-confidence. In addition to promoting hair hygiene and health, a proper hair care routine that incorporates appropriate products may reduce the possibility of premature hair loss. Therefore, maintaining a healthy hair appearance can improve an individual's relationship with themselves and others as well as enhance their well-being.

Accordingly, a Salon Half-Head Study was conducted on ethnic hair types to evaluate the perceived hair benefits of **AcquaSeal® Coconut** in a shampoo and conditioner on wet and dry hair.

Study Principle

Initial photographs of participants hair were obtained. Following baseline images, participants had half of their hair washed with a control Base Shampoo and Base Conditioner, while the other half of their hair was washed with the test material in a Base Shampoo and Base Conditioner. Participants completed wet and dry sensory analysis assessments and final photographs were obtained after participant's hair was completely dry.

Materials

- A. **Materials:** T3 Blow-Dryer; 1.5" Round Brush
- B. **Products:** Base Shampoo and Base Conditioner (Table 1)
- C. **Software:** Excel Analysis ToolPak (Microsoft)

Table 1. Ingredient List (INCI Names) of Base Shampoo and Base Conditioner

Base Shampoo	Base Conditioner
Water	Water
Guar Hydroxypropyltrimonium Chloride	Polyquaternium-10
Sodium Methyl 2-Sulfolaurate	Glycerin
Cocamidopropyl Betaine	Cetrimonium Chloride
Lactobacillus Ferment	Behentrimonium Methosulfate
Lactobacillus	Cetearyl Alcohol
Coco Nucifera (Coconut) Fruit Extract	Butylene Glycol
	Hydrogenated Ethylhexyl Olivat
	Lactobacillus Ferment

Methods

Five volunteers between the ages of 22 and 40 participated in this study. Each participant had both halves of their head assigned to a specific condition and were blinded to the treatment (Table 2). The left half of their head was treated with the Base Shampoo and Base Conditioner alone. Conversely, the right half of their head was treated with 2.0% **AcquaSeal® Coconut** in the Base Shampoo and Base Conditioner. Baseline photographs were taken of participants' hair prior to washing. After the shampoo treatment was applied and washed out, participants completed a wet sensory analysis regarding the shampoo. Next, the conditioner treatment was applied, washed out, and a wet sensory analysis pertaining to the conditioner was completed. After each participant's hair was blown dry with a round brush, final photographs were taken, and participants were asked to complete a dry sensory analysis of the conditioner treatment.

Table 2. Descriptions of the Conditions and Treatments for each Test Site

Hair Test Site	Condition	Treatment / Test Article Application Description
1	Base Shampoo and Base Conditioner	Base Shampoo and Base Conditioner
2	2.0% AcquaSeal® Coconut	2.0% AcquaSeal® Coconut in Base Shampoo and Base Conditioner

The wet and dry sensory analyses were implemented to evaluate multiple perceived hair benefit parameters of each shampoo and conditioner treatment. Analyses were completed using a scale from 1 to 10, with 1 indicating the lowest perceived benefit and 10 representing the highest perceived benefit. Results from the wet and dry sensory analysis assessments were averaged for each parameter. Data is displayed as averages and was analyzed using paired t-tests with statistical significance accepted at $p \leq 0.05$. The percent change in each parameter was calculated relative to the Base Shampoo and Base Conditioner, using the following equation:

$$\text{Percent Change (\%)} = \frac{\text{Rating}_{2.0\% \text{ AcquaSeal® Coconut}} - \text{Rating}_{\text{Base Shampoo and Base Conditioner}}}{\text{Rating}_{\text{Base Shampoo and Base Conditioner}}} \times 100$$

Table 3. Wet and Dry Sensory Analysis Parameter Descriptions

	Parameter	Description
Wet Assessment	Wet Combability	Ability to brush hair easily without pulling while the hair is wet
	Dry Combability	Ability to brush hair easily without pulling while the hair is dry
Dry Assessment	Volume	Ability to make hair lift at the root and appear full
	Hydration	Ability to make hair look clean and feel soft
	Thickness	Ability to make hair feel and appear denser
	Shine	Ability to make hair look bright and luminous
	Softness	Ability to make hair feel smooth
	Manageability	Ability to make hair easy or possible to handle

Results

The data obtained from this study met criteria for a valid study as the Base Shampoo and Conditioner performed as anticipated. The addition of 2.0% **AcquaSeal® Coconut** in shampoo and conditioner improved the perceived benefits in wet and dry hair compared to the Base Shampoo and Conditioner.

Shampoo and Conditioner: Wet Sensory Analysis AcquaSeal® Coconut

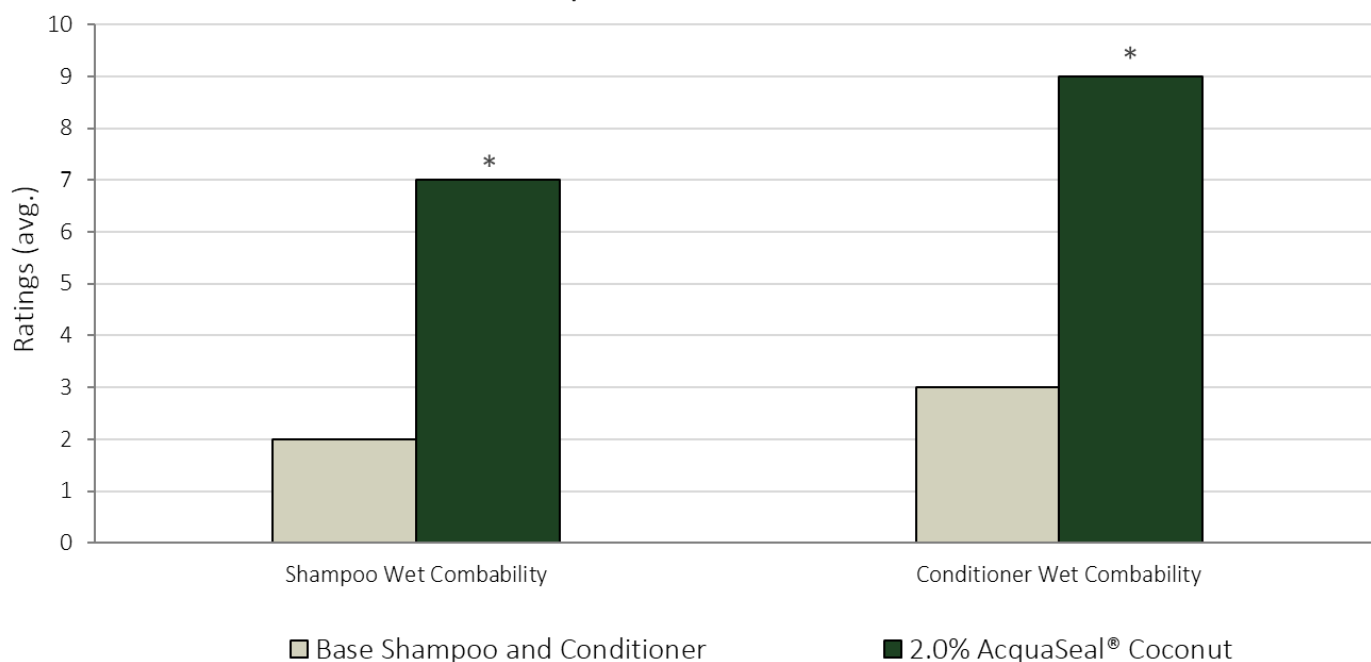


Figure 1. Results of the Wet Sensory Analysis After Shampoo and Conditioner Treatments. Analyses were completed using a scale from 1 to 10, with 1 indicating the lowest perceived benefit and 10 representing the highest perceived benefit. * indicates significance ($p \leq 0.05$) between conditions.

Table 4. Results from the T-test Analysis of the Wet Sensory Analysis Parameters between Base Shampoo and Conditioner and 2.0% AcquaSeal® Coconut. * indicates significance ($p \leq 0.05$) between conditions.

	Shampoo Wet Combability	Conditioner Wet Combability
P-value	< 0.001*	< 0.001*

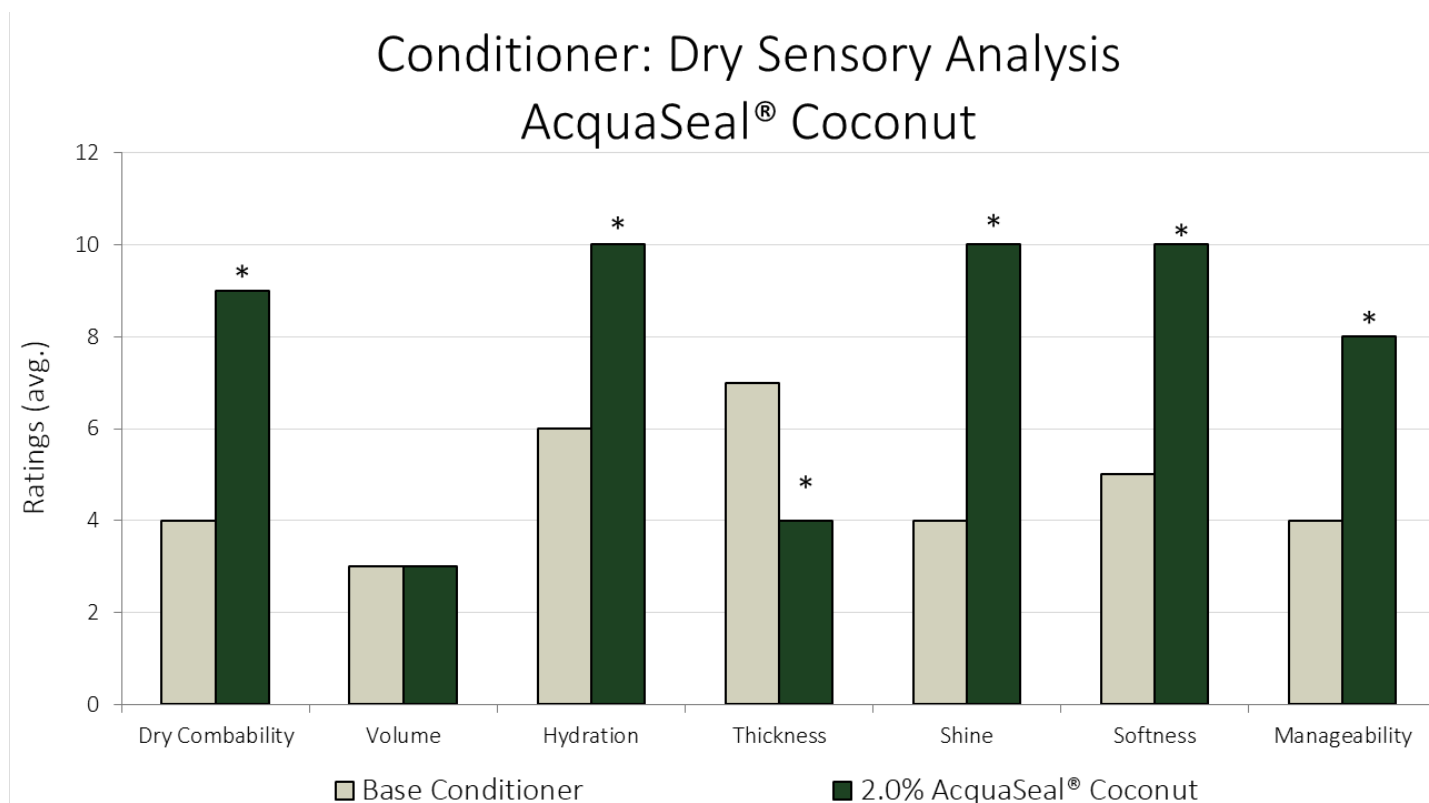


Figure 2. Results of the Dry Sensory Analysis After Conditioner Treatments and Hair was Blown Dry. Analyses were completed using a scale from 1 to 10, with 1 indicating the lowest perceived benefit and 10 representing the highest perceived benefit. * indicates significance ($p \leq 0.05$) between conditions.

Table 5. Results from the T-test Analysis of the Dry Sensory Analysis Parameters between the Base Conditioner and 2.0% AcquaSeal® Coconut. * indicates significance ($p \leq 0.05$) between conditions.

	Dry Combability	Volume	Hydration	Thickness	Shine	Softness	Manageability
P-value	< 0.001*	0.500	< 0.001*	0.009*	< 0.001*	< 0.001*	0.002*



Image 1. Participant Images Before Shampoo and Conditioner Application and After Blow Drying



Image 2. Participant Images Before Shampoo and Conditioner Application and After Blow Drying



Image 3. Participant Images Before Shampoo and Conditioner Application and After Blow Drying



Image 4. Participant Images Before Shampoo and Conditioner Application and After Blow Drying

Discussion

A Salon Half-Head Study was conducted to evaluate the perceived hair benefits of 2.0% **AcquaSeal® Coconut** in a shampoo and conditioner on wet and dry hair.

Wet sensory analysis of the Base Shampoo and Conditioner demonstrated perceived hair benefits were below average for Wet Combability (Figure 1). However, the addition of 2.0% **AcquaSeal® Coconut** to the Base Shampoo and Conditioner significantly improved perceived benefits of Wet Combability by 250% and 200% (Figure 1; Table 4). These results demonstrate **AcquaSeal® Coconut** increases the perceived ability to brush wet hair easily.

After hair was blown dry with a round brush, dry sensory analysis of the Base Conditioner demonstrated perceived hair benefits were below average for Dry Combability, Volume, Shine, and Manageability, above average for Hydration and Thickness, and average Softness (Figure 3). However, the addition of 2.0% **AcquaSeal® Coconut** to the Base Conditioner significantly improved perceived benefits of Dry Combability by 125%, Hydration by 67%, Shine by 150%, Softness by 100%, and Manageability by 100% in dry hair (Figure 3; Table 5). However, there was no effect of 2.0% **AcquaSeal® Coconut** on the perceived benefits for Volume (Figure 3; Table 5). Lastly, the addition of 2.0% **AcquaSeal® Coconut** reduced perceived Thickness by 43% compared to the Base Conditioner alone (Figure 3; Table 5). These results demonstrate **AcquaSeal® Coconut** enhances the perceived ability to brush dry hair easily, increases the brightness and luminous appearance of hair, improves the appearance of clean hair with a soft and manageable feel, and reduces the feeling of dense hair when added to a conditioner.

Furthermore, participants of all hair types experienced visual hair benefits when treated with 2.0% **AcquaSeal® Coconut**. Specifically, hair treated with 2.0% **AcquaSeal® Coconut** is visibly shinier, softer, and more hydrated compared to hair treated with the Base Shampoo and Conditioner (Images 1, 2, 3, 4). These results demonstrate **AcquaSeal® Coconut** elicits visual hair benefits when added to a shampoo and conditioner.

Taken together, these results indicate **AcquaSeal® Coconut** improves the perceived benefits with wet and dry hair when added to shampoo and conditioner at recommended use levels. Collectively, **AcquaSeal® Coconut** demonstrates visual and perceived hair characteristics which contribute to a healthier looking hair appearance.