

Tradename: Phytofuse Renew®

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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 to evaluate the perceived hair benefits of **Phytofuse Renew®** in a serum on wet and dry hair.

Study Principle

Initial photographs of participants hair were obtained. Following baseline images, participants had half of their hair treated with test material in a Base Serum while the other half was treated with 2.0% **Phytofuse Renew®** in a Base Serum. 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 Serum (Table 1)
- C. **Software:** Excel Analysis ToolPak (Microsoft)

Table 1. Ingredient List (INCI Names) of Base Serum

Base Serum	
Water	Lactobacillus/Eriodictyon Californicum Ferment Extract
Populus Tremuloides (Aspen) Bark Extract	Cymbidium Grandiflorum (Orchid) Flower Extract
Glycerin	Limnanthes Alba (Meadowfoam) Seed Oil
Sodium Polyacrylate	Stearyl Alcohol
Xanthan Gum	Linum Usitatissimum (Linseed) Seed Oil
Glyceryl Stearate	Camellia Sinensis Leaf Extract
Cyclopentasiloxane	Bid-Diglyceryl Polyacyladipate-2
Polydimethylsiloxane/Polymethylsilsesquioxane Copolymer	Ricinus Communis (Castor) Seed Oil
Cashmere	Beeswax
Malva Sylvestris (mallow) Extract	Copernicia Cerifera (Carnauba) Wax
Lilium Candidum Bulb Extract	Methyl Soyate
PPG-3 Myristyl Ether	Stearic Acid
Dimethicone	Lactobacillus/Arundinaria Gigante Ferment Filtrate
Lactobacillus/Wasabia Japonica Root Ferment Extract	Polyquaternium-10
Melanin & Superoxide Dismutase	Hydroxypropyltrimonium Rice Protein
Selaginella Lepidophylla Extract	Lactobacillus/Date Fruit Ferment Extract
Leuconostoc/Radish Root Ferment Filtrate	

Methods

Five volunteers between the ages of 24 and 32 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 a Base Serum alone. Conversely, the right half of their head was treated with 2.0% **Phytofuse Renew®** in a Base Serum. Baseline photographs were taken of participants' hair prior to product application. 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 serum treatment.

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

Hair Test Site	Condition	Treatment / Test Article Application Description
1	Base Serum	Base Serum
2	2.0% AC Phytofuse Renew®	2.0% Phytofuse Renew® in Base Serum

The sensory analyses were implemented to evaluate multiple perceived hair benefit parameters of each 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 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 Serum, using the following equation:

$$\text{Percent Change (\%)} = \frac{\text{Rating}_{2.0\% \text{ AC Phytofuse Renew}^\circledast} - \text{Rating}_{\text{Base Serum}}}{\text{Rating}_{\text{Base Serum}}} \times 100$$

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	Anti-Frizz	Ability to make hair fall uniformly while also decrease the amount of flyaways
	Overall Feel	Satisfaction of hair feel
	Hydration	Ability to make hair look clean and feel soft

Results

The data obtained met criteria for a valid study as the Base Serum performed as anticipated. The addition of 2.0% **Phytofuse Renew®** in a Base Serum improved the perceived benefits in wet and dry hair compared to the Base Serum alone.

Wet Sensory Analysis Phytofuse Renew®

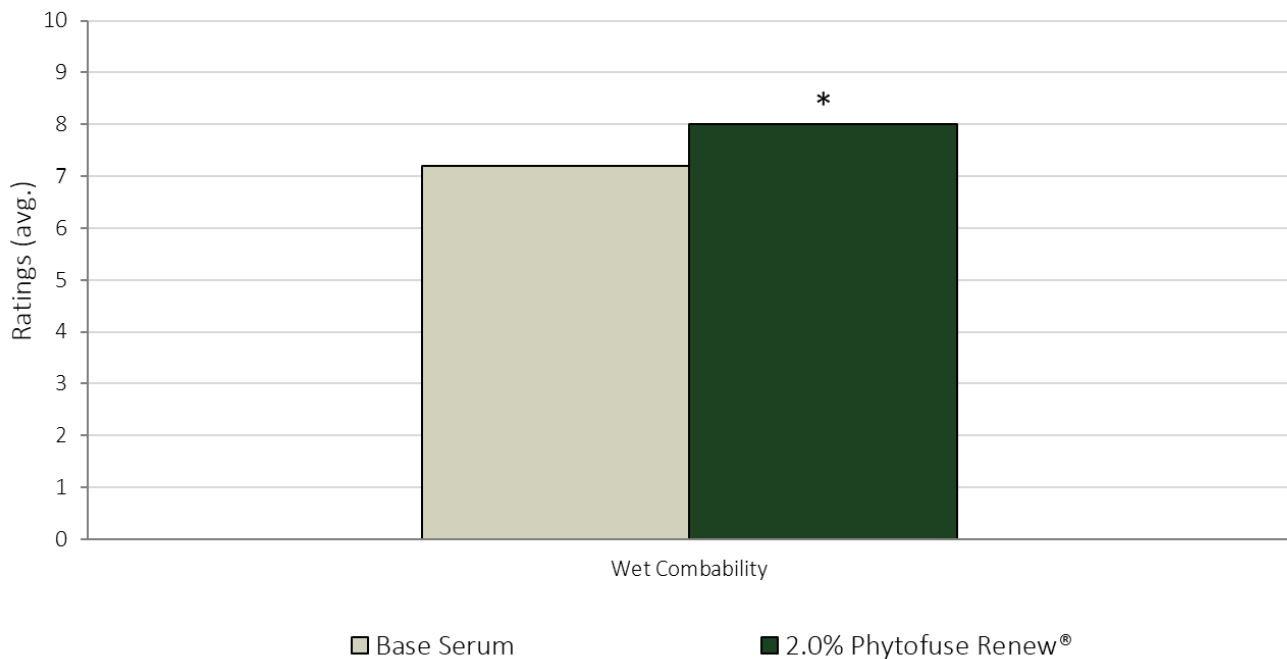


Figure 1. Results of the Wet Sensory Analysis After Serum Treatments. Analyses were completed using a scale from 1 to 10, with 1 indicating the lowest perceived benefit and 10 representing the highest perceived benefit. * indicates significance ($p \leq 0.05$) between conditions.

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

	Wet Combability
P-value	0.049*

Dry Sensory Analysis Phytofuse Renew®

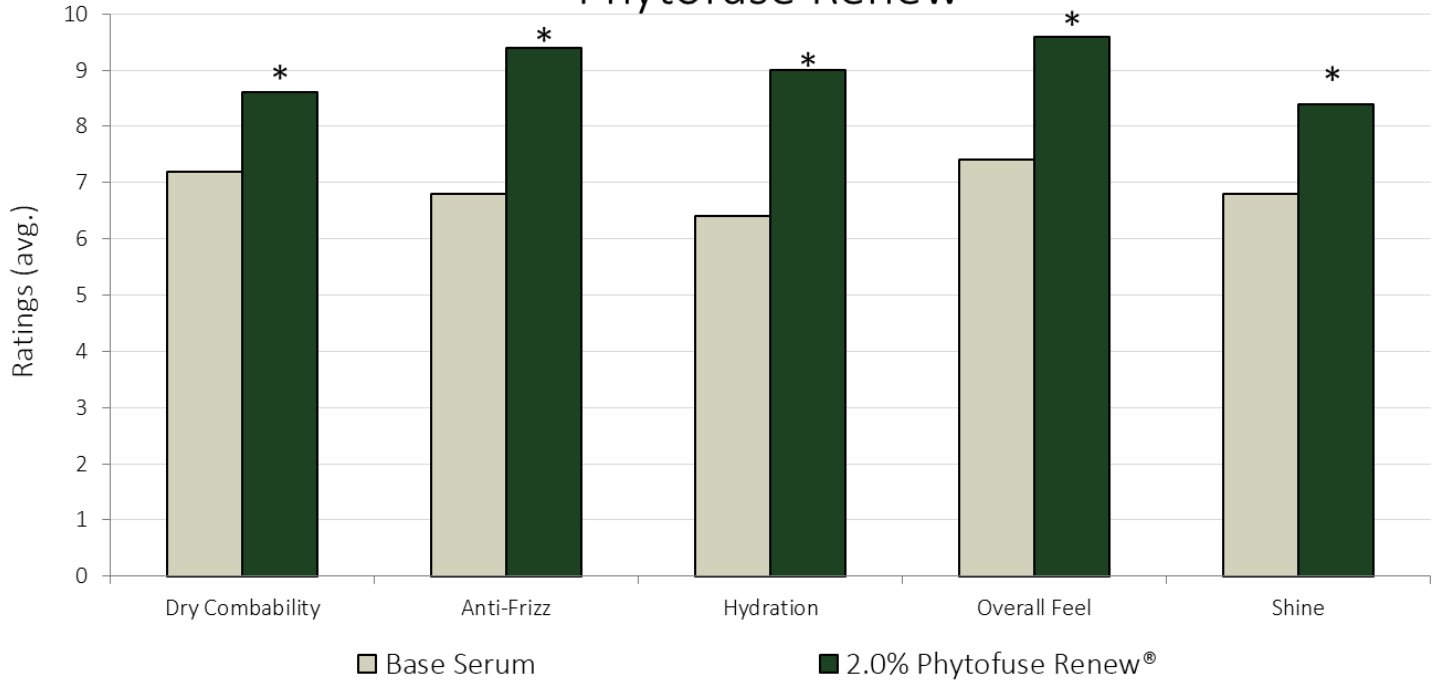


Figure 2. Results of the Dry Sensory Analysis After Serum Treatments and Hair was Blown Dry. Analyses were completed using a scale from 1 to 10, with 1 indicating the lowest perceived benefit and 10 representing the highest perceived benefit. * indicates significance ($p \leq 0.05$) between conditions.

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

	Dry Combability	Anti-Frizz	Hydration	Overall Feel	Shine
P-value	0.033*	0.001*	0.008*	0.002*	0.008*



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

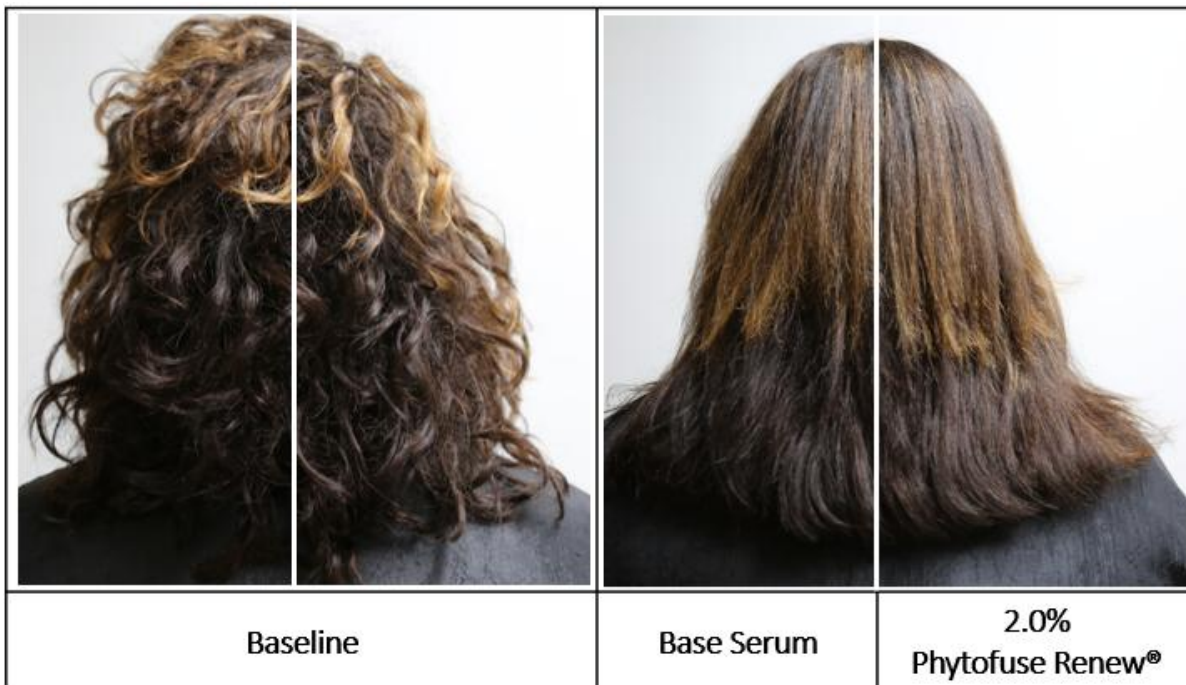


Image 5. Participant Images Before Shampoo and Conditioner Application and After Blow Drying

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Discussion

A Salon Half-Head Study was conducted to evaluate the perceived hair benefits of 2.0% **Phytofuse Renew**® in a serum on wet and dry hair.

Wet sensory analysis of the Base Serum demonstrated perceived hair benefits were slightly above average for Wet Combability (Figure 1). However, the addition of 2.0% **Phytofuse Renew**® to the Base Serum significantly improved perceived benefits of Wet Combability by 11% (Figure 1; Table 4). These results demonstrate **Phytofuse Renew**® increases the perceived ability to brush wet hair easily when added to a serum.

After hair was blown dry with a round brush, dry sensory analysis of the Base Serum demonstrated perceived hair benefits were above average for Dry Combability Anti-Frizz, Hydration, Overall Feel, and Shine (Figure 3). However, the addition of 2.0% **Phytofuse Renew**® to the Base Serum improved perceived benefits of Dry Combability by 19%, Anti-Frizz by 38%, Hydration by 41%, Overall Feel by 30%, and Shine by 24% in dry hair (Figure 3; Table 6). These results demonstrate **Phytofuse Renew**® enhances the perceived ability to brush dry hair easily, helps hair fall uniformly while reducing flyaways, improves the satisfaction of hair feel, increases the brightness and luminous appearance of hair, and improves the appearance of clean hair with a soft feel when added to a conditioner.

Furthermore, participants of all hair types experienced visual hair benefits when treated with 2.0% **Phytofuse Renew**®. Specifically, hair treated with 2.0% **Phytofuse Renew**® is visibly smoother, shinier, and more hydrated with less frizziness compared to hair treated with the Base Serum (Images 1, 2, 3, 4, 5). These results demonstrate **Phytofuse Renew**® elicits visual hair benefits when added to a serum.

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