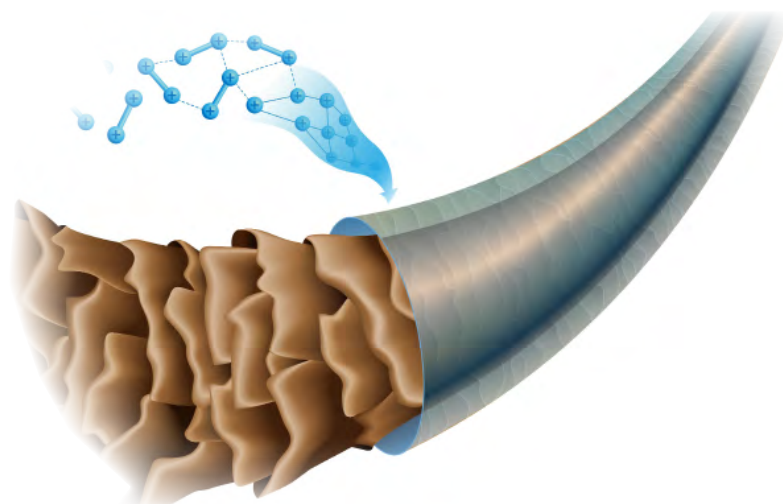


ProCutiGen® Bond



Bivalent Cationic Lipopeptide
Repair Beyond the Bond!

support + protect hair cuticle
ProBonding, chia derived
biomimetic, neo-cuticle
preventative haircare

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.

ProCutiGen® Bond is a product designed to be added to any hair product that wishes to protect the hair via pro-bonding. It gently lifts the hair and protects it from the harsh effects of bleach. **ProCutiGen® Bond** prevents the chemical damage that breaks the protein bonds of your hair, making it porous, weakened and more prone to breakage. Rather than focusing on repairing broken bonds that occur during chemical stress, **ProCutiGen® Bond** consists of bivalent cationic peptides that create a de novo cuticle on the hair to prevent damage from happening in the first place.

A half head study was conducted to determine the comparison of a control shampoo vs. 2.0% **ProCutiGen® Bond** in the control shampoo. Additionally, a comparison between the control conditioner and 2.0% **ProCutiGen® Bond** 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, **ProCutiGen® Bond** is capable of enhancing smoothing, wet and dry combability, anti-frizz, overall feel, shine and hydration when used in a conditioner.

Code Number: 20829

INCI Name: Salvia Hispanica
Seed Extract

INCI Status: Conforms

REACH Status: Complies

CAS Number: 93384-40-8

EINECS Number: 297-250-8

Origin: Botanical

Processing:

GMO Free

No Ethoxylation

No Irradiation

No Sulphonation

Additives:

Preservatives: None

Antioxidants: None

Other additives: None

Solvents Used: Water

Appearance: Clear to Slightly
Hazy Liquid

Soluble/ Miscible: Water Soluble

Ecological Information:

91.80% Biodegradability

Microbial Count: <100 opg,
No Pathogens

Suggested Use Levels: 1.0 - 10.0%

Suggested Applications:

Pro-Bonding, Protection,
Preventative Hair Care

Test Request Form Number: 3288

Lot Number: NC170116-K

Suggest Finished Formula
Applications **ProCutiGen® Bond** :

- Daily Shampoo & Conditioner
- Chemical Pre-Treatment
- Styling/Protection Product

ProCutiGen® Bond

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% **ProCutiGen® Bond** 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% ProCutiGen® Bond in Control Shampoo)	Assessment of the Control Conditioner	Assessment of the Experimental (2.0% ProCutiGen® Bond in Control Conditioner)
Cleansing	6.00	8.00	X	X
Smoothing	5.00	9.00	5.00	8.00
Wet Combability	5.00	7.00	5.00	6.00
Dry Combability	X	X	7.00	8.00
Anti-Frizz	X	X	7.00	8.00
Overall Feel	X	X	6.00	9.00
Shine	X	X	6.00	9.00
Hydration	X	X	6.00	8.00
Mean	6.00	8.00	5.25	8.00

Figure 1. Average Results for Participant's Sensory Assessment.

Parameters Tested	Percent Difference – Comparison of Control Shampoo vs. Experimental (2.0% ProCutiGen® Bond in Control Shampoo)	Percent Difference – Comparison of Control Conditioner vs. Experimental (2.0% ProCutiGen® Bond in Control Conditioner)
Cleansing	38%	X
Smoothing	45%	38%
Wet Combability	29%	18%
Dry Combability	X	13%
Anti-Frizz	X	13%
Overall Feel	X	40%
Shine	X	40%
Hydration	X	29%
Mean	25%	27%

Figure 2. Percent Difference of Participant's Sensory Assessment.

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Assessment of Hair Characteristics

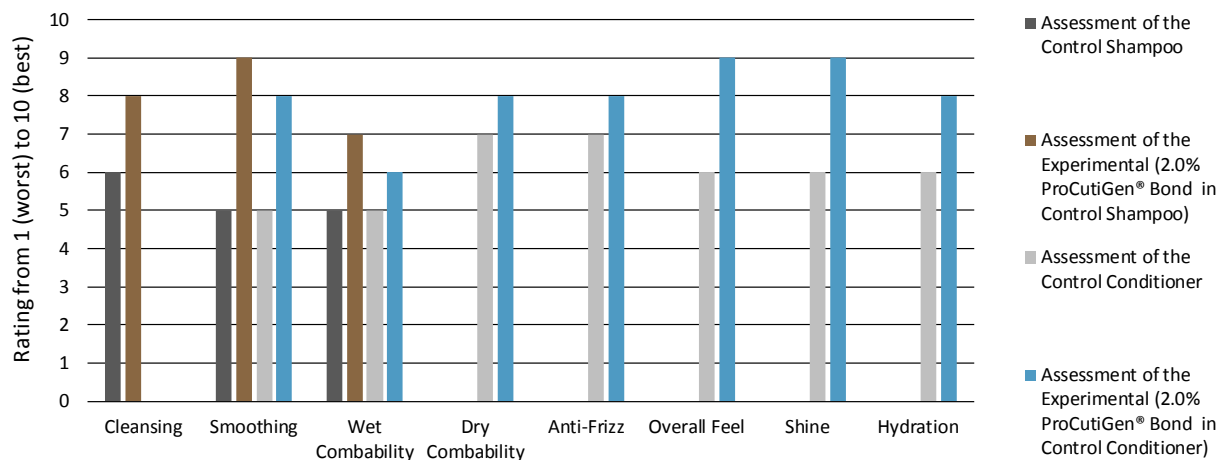


Figure 3. Rating of hair characteristics following sensory assessment.

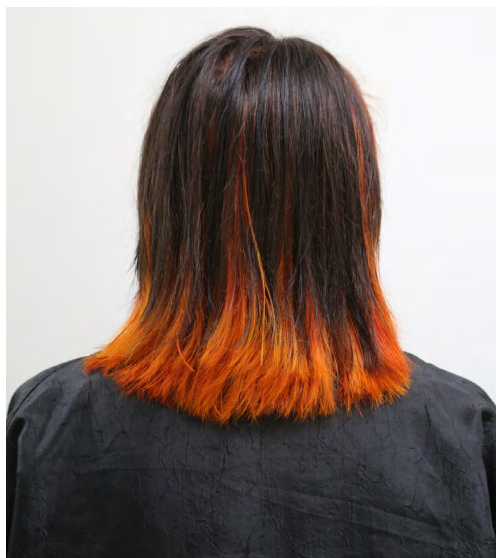


Figure 4. Full head Baseline, Untreated Hair.

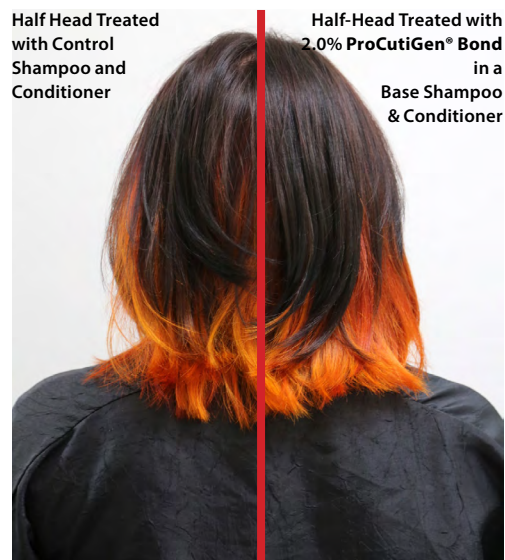


Figure 5. Half Head Treated.



Figure 6. Full head Baseline, Untreated Hair.



Figure 7. Half Head Treated.

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Figure 8. Full head Baseline, Untreated Hair.

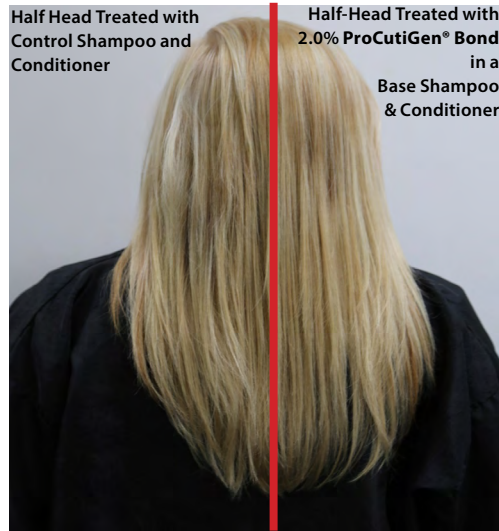


Figure 9. Half Head Treated.



Figure 10. Full head Baseline, Untreated Hair.

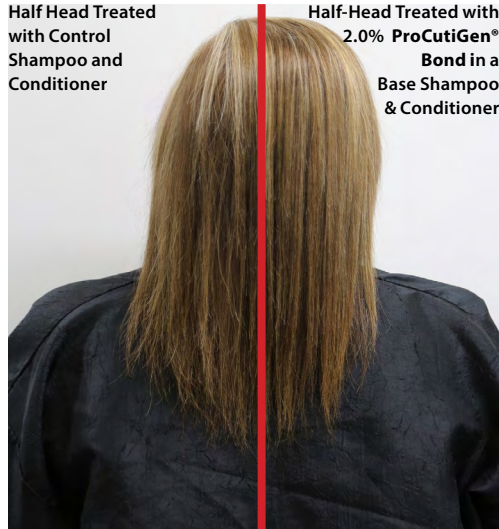


Figure 11. Half Head Treated.



Figure 12. Full head Baseline, Untreated Hair.

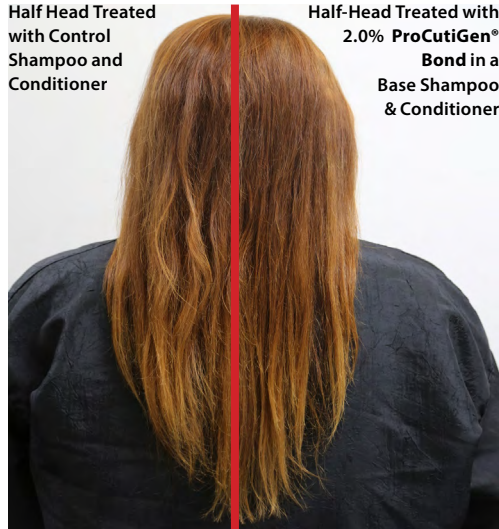


Figure 13. Half Head Treated.

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When comparing hair characteristics of the baseline assessments to the post style assessments, the benefits of including 2.0% **ProCutiGen® Bond** in a conditioner are even more apparent. In relation to the baseline readings, the test-half of the head improved the intended subjective parameters of smoothness, wet and dry combability, anti-frizz, overall feel, shine and hydration by 38%, 18%, 13%, 13%, 40%, 40% and 29%, respectively. It is clear from the images in this study that **ProCutiGen® Bond** helps create a smooth, sleek hairstyle. Additionally, in all images, the hair is noticeably shinier, with less frizz and has a healthy appearance.

The professional stylist who performed the actual tests by applying the product, styling the hair and documenting the images said **ProCutiGen® Bond** is great for use on any hair type. This product works well at reducing frizziness and smoothing of the hair. This product enhances the sleekness, combability, the overall feel and look of the hair. Recommended for consumers with ethnic or coarse hair to achieve a silky, less frizzy style. **ProCutiGen® Bond** is good for use in a pre-treatment or after chemical treatment product. This product also has the ability to recondition the hair after chemical treatment, providing a smooth and healthy feel.

Comparison of Control Conditioner vs. Experimental

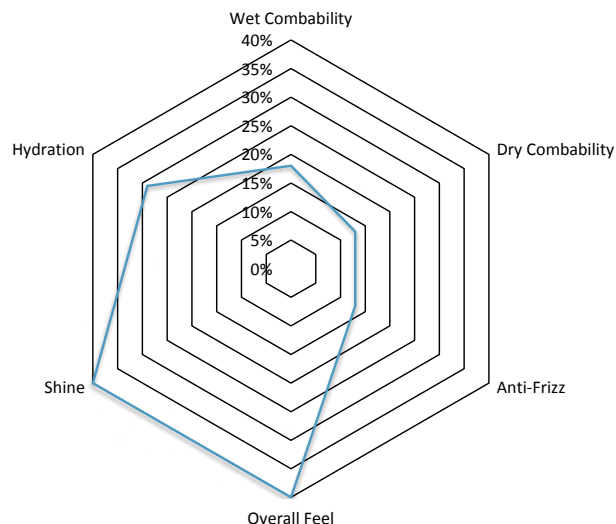


Figure 14. Hair Assessment results for sensory characteristics.

DISCUSSION

The results of the assessment indicate that when incorporated into a shampoo, 2.0% **ProCutiGen® Bond** did show improvement in wet combability. However, when used in a conditioner **ProCutiGen® Bond** is capable of improving smoothing, wet and dry combability, 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% **ProCutiGen® Bond** appears sleek, smooth and less frizzy. Additionally, the subjects reported a significant increase in smoothness, combability and overall feel of the hair, especially after chemical treatment.