

# Salon Half-Head Hair Study



## Cellular Turnover Fruit Enzyme & Exfoliation Skin, Hair & Scalp Care Lactobacillus Phytochemicals Stability Fermentation

### 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.

**ACB Modified Pumpkin Enzyme PF** is a product designed to provide exfoliation and conditioning benefits. However, this unique ingredient also enhances smoothing, dry and wet combability, anti-frizz, overall feel, shine and hydration when used in hair care products. The purpose of this study was to confirm whether **ACB Modified Pumpkin Enzyme PF** 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% **ACB Modified Pumpkin Enzyme PF** in the control shampoo. Additionally, a comparison between the control conditioner and 2.0% **ACB Modified Pumpkin Enzyme PF** 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, **ACB Modified Pumpkin Enzyme PF** is capable of enhancing 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 any hair types, especially ethnic, thick or unruly hair.

**Code Number: 20496**

**INCI Name:** Lactobacillus/Pumpkin  
 Fruit Ferment Filtrate  
**INCI Status:** Conforms  
**REACH Status:** Complies  
**CAS Number:** 89998-03-8  
**EINCS Number:** 289-741-0

**TRF#:** S23  
**Lot Number(s):**  
 #NC150625-H, #NC150625-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:** Meghan Darley

**Suggested Applications:** Exfoliation

Benefits of **ACB Modified Pumpkin Enzyme PF:**

- Exfoliation
- Great for scalp care applications
- Marketable

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## 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% **ACB Modified Pumpkin Enzyme PF** 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% ACB Modified Pumpkin Enzyme PF in Control Shampoo)	Assessment of the Control Conditioner	Assessment of the Experimental (2.0% ACB Modified Pumpkin Enzyme PF in Control Conditioner)
Cleansing	6.00	7.00	X	X
Smoothing	5.00	5.00	5.00	6.00
Wet Combability	2.00	3.00	5.00	6.00
Dry Combability	X	X	5.00	7.00
Anti-Frizz	X	X	4.00	8.00
Overall Feel	X	X	4.00	9.00
Shine	X	X	5.00	8.00
Hydration	X	X	5.00	9.00
Mean	4.33	5.00	4.71	7.57

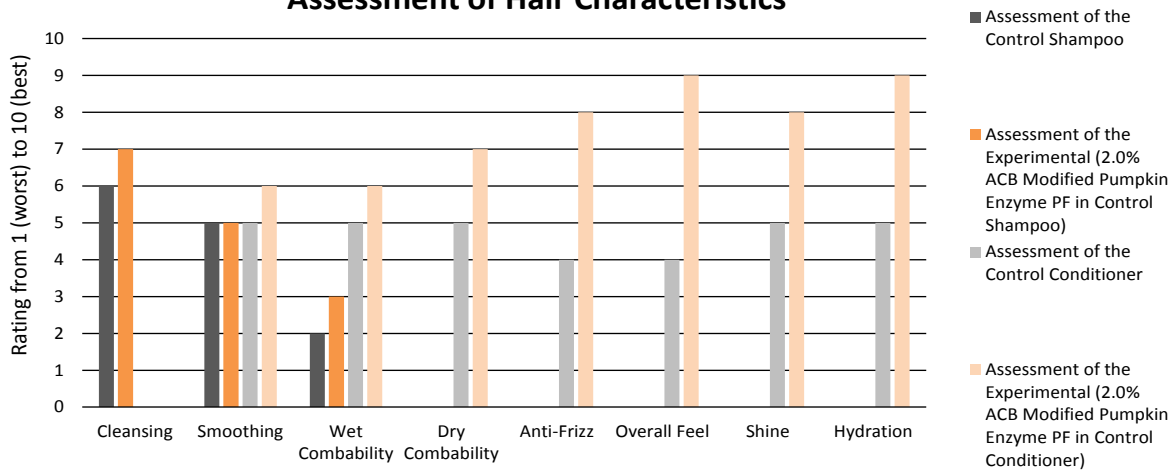
Chart 1. Average Results for Participant's Sensory Assessment

Parameters Tested	Percent Difference – Comparison of Control Shampoo vs. Experimental (2.0% ACB Modified Pumpkin Enzyme PF in Control Shampoo)	Percent Difference – Comparison of Control Conditioner vs. Experimental (2.0% ACB Modified Pumpkin Enzyme PF in Control Conditioner)
Cleansing	15%	X
Smoothing	0%	18%
Wet Combability	40%	18%
Dry Combability	X	33%
Anti-Frizz	X	67%
Overall Feel	X	77%
Shine	X	46%
Hydration	X	57%
Mean	18%	45%

Chart 2. Percent Difference of Participant's Sensory Assessment

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## Assessment of Hair Characteristics



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

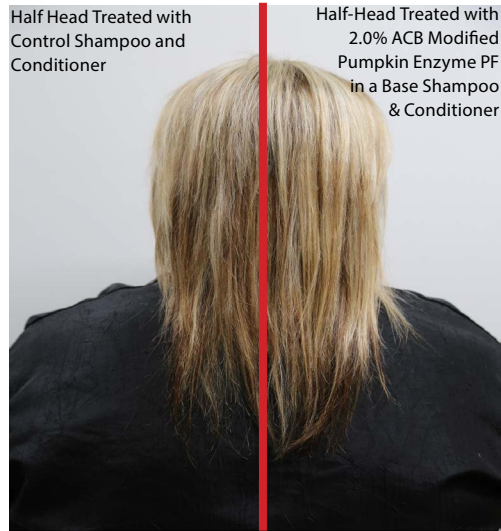


Figure 6. Half Head Treated



Figure 7. Full head Baseline, Untreated Hair



Figure 8. Half Head Treated



Figure 9. Full head Baseline, Untreated Hair

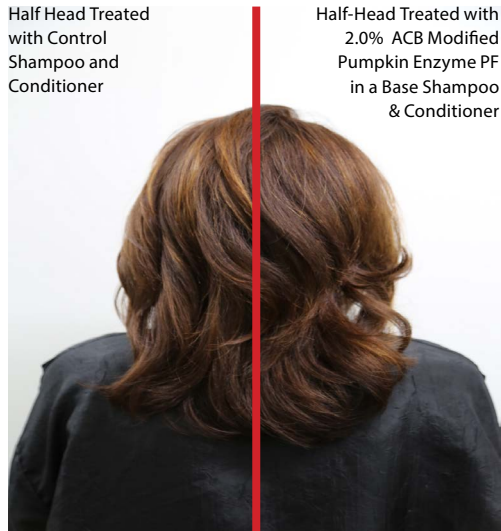


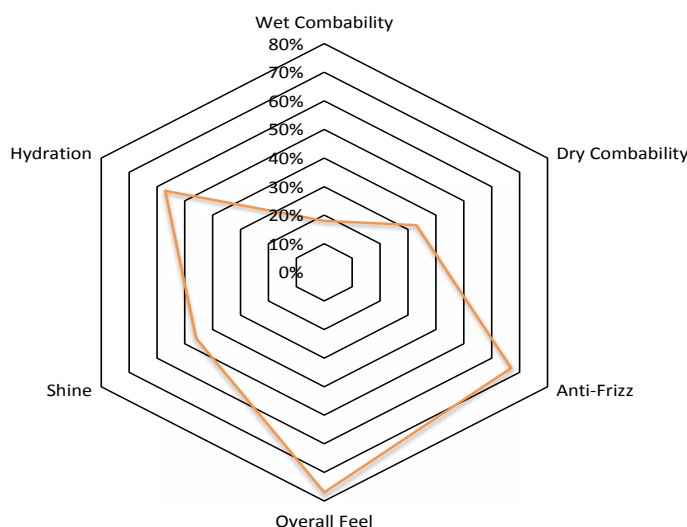
Figure 10. Half Head Treated

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When comparing hair characteristics of the baseline assessments to the post style assessments, the benefits of including 2.0% **ACB Modified Pumpkin Enzyme PF** in a shampoo and conditioner are even more apparent. In relation to the baseline readings, the test-half of the head improved the intended subjective parameters, improving smoothing, wet and dry combability, anti-frizz, overall feel, shine and hydration by 18%, 18%, 33%, 67%, 77% and 46% and 57%, respectively. It is clear from the images in this study that **ACB Modified Pumpkin Enzyme PF** helps create a smooth, sleek hairstyle. Additionally, in all images, the hair is noticeably shinier and has a more conditioned appearance.

The professional stylist who performed the actual tests by applying the product, styling the hair and documenting the images said **ACB Modified Pumpkin Enzyme PF** is great for smoothing damaged or frizzy hair. It also worked great to fight humidity throughout the day. This product enhanced the shine and silky feel of styled hair, even after heat treatment was used. Perfect for use in repair treatments or hair masks to restore damaged hair and provide a youthful, silky feel.

## Comparison of Control Conditioner vs. Experimental



Graph 2. Hair Assessment results for sensory characteristics

## DISCUSSION

The results of the assessment indicate that when incorporated into a shampoo, 2.0% **ACB Modified Pumpkin Enzyme PF** did show improvement in cleansing and wet combability. However, when used in a conditioner **ACB Modified Pumpkin Enzyme PF** 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% **ACB Modified Pumpkin Enzyme PF** appears healthy and silky smooth. Additionally, the subjects reported a significant increase in smoothness and overall feel of the hair, especially when heat was applied for styling or when exposed to humidity.