**BACKGROUND**
Cleansers are designed to remove oil, dirt, sweat and sebum from skin through the action of surfactants. Surfactants are substances capable of dissolving oils and holding dirt in suspension so it can be easily rinsed away with water. As several surfactants available on the market are synthetic, many consumers are seeking natural alternative options. AC Foaming Collagen PF is produced through the combination of protein and coconut fatty acids and has been designed as a natural alternative to synthetic surfactants.

Proteins are common ingredients in skin and hair care products and collagen is the most abundant protein in the human body. Functionally proteins form films that seal in moisture, economically they are an inexpensive alternative to most synthetic chemicals. There are a wide variety of proteins available to cosmetic chemists because proteins are integral components in all organisms. Capitalizing on the outstanding consumer recognition of collagen, AC Foaming Collagen PF consists of bovine derived collagen that offers both excellent hydrating properties and film-forming benefits.

**SCIENCE**
Collagen is often hydrolyzed into lower molecular weight fractions to increase its solubility. Adding fatty acid condensate moieties, which enhance foaming qualities, further modifies the protein. Often consumers associate a product’s cleansing ability with its foaming capability. AC Foaming Collagen PF is a hydrolyzed collagen protein with potassium cocooyl moieties. These potassium cocooyl moieties are coconut-derived fatty acids that enhance the foaming qualities of the protein. These protein-fatty acid condensates that are used in mild shower, bath and shampoo products as well as surfactant-based facial cleansers, and baby products.

**Benefits of AC Foaming Collagen PF:**
- Conditioning
- Gentle Cleansing
- Skin and Hair Care Applications
AC Foaming Collagen PF

Protein/fatty acid condensates have an anionic net charge similar to that of skin and hair so it rinses easily from hair and skin without leaving a sticky irritating film behind. The complex has a hydrophobic fatty acid tail and a hydrophilic protein backbone. The hydrophobic region binds to lipophilic material and forms a micelle that encapsulates lipophilic species. The micelles have a hydrophobic interior and a hydrophilic exterior, which promote easy rinsing with water. Protein hydrolysate improves surfactant skin compatibility while the fatty acid moiety increases foaming properties. The complex also forms a protective layer on the skin through a reaction between the collagen in skin and the protein/fatty acid condensate. This protective layer reduces the irritation caused by other surfactants, and improves the degreasing characteristics of the product.²

**BENEFITS**

**AC Foaming Collagen PF** is a product designed for use in mild cleansing products to provide moisturizing and conditioning benefits to the skin and hair. In hair care applications, **AC Foaming Collagen PF** enhances smoothing, wet and dry combability, anti-frizz, overall feel, shine and hydration. Due to the protein/acid moieties associated with the structure, **AC Foaming Collagen PF** can be added to mild detergent products such as body gels, shampoos, body washes and facial cleansers. **AC Foaming Collagen PF** creates mild foaming and can be used as a natural surfactant, making it perfect for sensitive skin and scalp care applications as well as baby products.

**EFFICACY DATA**

A half-head study was conducted to determine the comparison of a control shampoo vs. 2.0% **AC Foaming Collagen PF** in the control shampoo. Additionally, a comparison between the control conditioner and 2.0% **AC Foaming Collagen 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, **AC Foaming Collagen PF** is capable of enhancing smoothness, wet and dry combability, anti-frizz, overall feel, shine and hydration when used in a conditioner. These attributes makes it an ideal ingredient for use in products intended for thick, unruly or ethnic hair types.

**Assessment of Hair Characteristics**

![Graph showing assessment of hair characteristics](image1.png)

*Figure 1. Rating of hair characteristics following sensory assessment*
When incorporated into a shampoo, 2.0% **AC Foaming Collagen PF** did show improvement in the parameters tested. However, when used in a conditioner **AC Foaming Collagen 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 2 through 5, where clearly the half of the subject’s head treated with 2.0% **AC Foaming Collagen PF** appears sleek, smooth, less frizzy, and hydrated. Additionally, the subjects reported a significant increase in smoothness, shine and overall feel of the hair.

It is clear from the images in the study that **AC Foaming Collagen PF** helps create a smooth, sleek hairstyle. Additionally, in all images, the hair is noticeably shinier, less frizzy and has a more hydrated appearance.
AC Foaming Collagen PF

The professional stylist who performed the actual tests by applying the product, styling the hair, and documenting the images said AC Foaming Collagen PF is great for smoothing frizzy, unruly hair. This product can provide gentle cleansing while enhancing the shine and overall feel of styled hair. The product is lightweight and would be perfect for applications targeting fine hair. AC Foaming Collagen PF is good for use in a leave on application or shampoo and conditioner for perceivable benefits.

Comparison of Control Conditioner vs. Experimental

Figure 6. Hair Assessment results for sensory characteristics

References