

# ACB Fruit Mix



AHAs Transformed the Modern Cosmetic Market  
**Feel and See Results!**  
 smoother + brighter complexion  
 immediately  
 exfoliating, moisturizing  
 decreased  
 appearance of wrinkles

## BACKGROUND

Alpha Hydroxy Acids transformed the modern cosmetic market. Instead of relying on statistics, consumers could literally feel and see an immediate difference in their skin – a smooth, brighter complexion with a diminished appearance of unwanted wrinkles. **ACB Fruit Mix** contains natural Alpha Hydroxy Acids (AHAs). This product is capable of improving moisturization while simultaneously increasing the production of structural components, such as collagen and glycosaminoglycan, as well as reversing cutaneous atrophy. **ACB Fruit Mix** is the way to smooth, wrinkle-free skin, truly revealing a rejuvenated complexion!

A contributing factor to AHA efficacy is its differentiation from other organic acids. AHAs have a hydroxyl (OH) group in the alpha position that is relative to the carboxyl (COOH) group. Theories for the mechanism of AHA-activity range from the sequestration of Ca<sup>2+</sup> and the associated disruption of divalent metal cation-dependent cell adhesion molecules to the roles of AHAs as intermediates in a variety of metabolic pathways. **ACB Fruit Mix** will work to help brighten skin, shed the dullness, and deliver much needed therapeutic benefits so you can shine.

The topical use of AHAs dates back to the beginning of recorded history. Traditional skin care treatments for softening skin have included milk and lemon juice, both of which contain AHAs. Since then, products comprised of AHAs have become widely used in cosmetics. Consumer attention was first captured when AHA products incorporating fruit and sugar derivatives were initially marketed towards acne treatments, anti-aging products and hyperpigmentation applications. From capabilities such as smoothing fine lines to help minimize the appearance of wrinkles, AHAs are favored for improving skin tone and condition, while enhancing overall texture.

**Code Number: 20343LNZ**

**INCI Name:** Water & Vaccinium Myrtillus Fruit Extract & Saccharum Officinarum (Sugar Cane) Extract & Citrus Aurantium Dulcis (Orange) Fruit Extract & Citrus Limon (Lemon) Fruit Extract & Acer Saccharum (Sugar Maple) Extract

**INCI Status:** Conforms

**REACH Status:** Compliant

**CAS Number:** 7732-18-5 & 84082-34-8 & 91722-22-4 & 8028-48-6 (or) 84012-28-2 & 84929-31-7 & 91770-22-8

**EINECS Number:** 231-791-2 & 281-983-5 & 294-424-5 & 232-433-8 & 284-515-8 & 294-807-7

**Origin:** Botanical

**Processing:**

- GMO Free
- No Ethoxylation
- No Irradiation
- No Sulphonation

**Additives:**

- Preservatives: None
- Antioxidants: None
- Other additives: None

**Solvents Used:** Water

**Appearance:** Clear, Colorless to Pale Yellow Liquid

**Soluble/ Miscible:** Water Soluble

**Microbial Count:**

< 100 CFU/g, No Pathogens

**Suggested Use Levels:** 1.0 – 10.0%

**Suggested Applications:**

- Exfoliation, Problem Skin, Enhance Cellular Renewal

**Benefits of ACB Fruit Mix:**

- Immediately Perceivable Results
- Excellent for Problem Skin
- Increases Rate of Cellular Renewal
- Moisturizing
- Decreases Appearance of Wrinkles

# ACB Fruit Mix

## SCIENCE

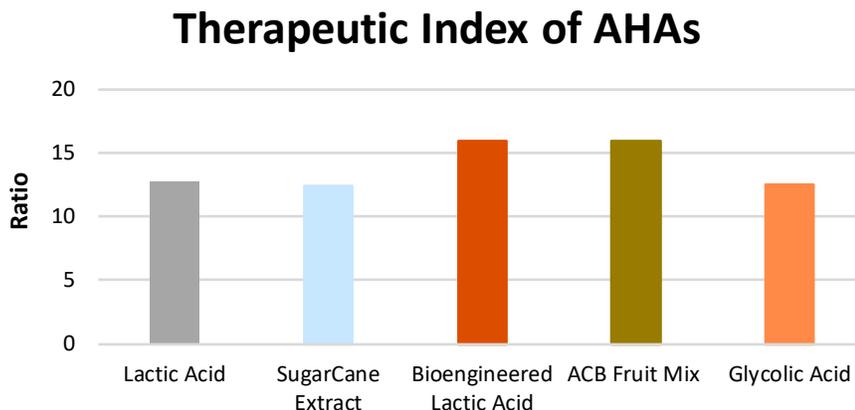
**ACB Fruit Mix** is based on a standardized extraction of five plant species: Bilberry, Sugar Cane, Orange, Lemon, and Sugar Maple. These botanical extracts deliver five natural AHAs to the skin: Lactic Acid (from Bilberry), Glycolic Acid (from Sugar Cane), Citric Acid (from Orange and Lemon), and Malic and Tartaric Acids (from Sugar Maple). These AHAs are commonly used to treat skin conditions such as rough skin, surface wrinkles and fine lines. Recognized for having exfoliating properties, AHAs leave the skin with a smooth and radiant appearance.

Glycolic acid, the smallest molecular structure of the group, has proved effective in cosmetics due to its ability to reach the deeper layers of the skin, thus making it an excellent exfoliating agent that provides immediate skin softening effects. Glycolic acid loosens corneocyte attachments and reduces cell cohesion at the lower level of the stratum corneum to promote cellular renewal. As new skin cells generate, older cells slough off to reveal smoother looking skin. Factors such as sun damage, age and environmental stress slow down this process which results in the accumulation of dead skin cells. The use of alpha-hydroxy acids can combat the problem by breaking proteolytic bonds to increase cellular renewal<sup>2</sup>. Moreover, glycolic acid allows the capillaries to dilate and deliver more oxygen and energy to the cells for increased intracellular efficiency. In addition to increasing collagen and glycosaminoglycan (GAG) synthesis, Glycolic acid treatments also increase type I collagen mRNA and hyaluronic acid content of human skin.

Lactic acid is an excellent moisturizing ingredient and beneficial for most hyper-proliferate skin conditions. One of the key benefits for using lactic acid in anti-aging applications is that research has also shown it is capable of reversing cutaneous atrophy. This will help thicken the skin to create a more youthful aesthetic. Citric acid is an intermediate in the Krebs cycle and is integral for ATP production, which helps to promote healthy skin by stimulating the formation of fibrous protein. The Krebs cycle, also known as Citric Acid, occurs in the mitochondria of our cells. This cycle is responsible for metabolizing sugar intake thus breaking it into carbon dioxide, water, and energy. In skin biology, Citric Acid provides cells with a source of useable energy<sup>4</sup>. This, in turn, contributes to the factors that chemically exfoliate the outer layer of the epidermis. Malic and tartaric acids also influence skin tone and have been shown to increase elasticity, which is an important factor to enhancing complexion clarity.

## BENEFITS

**ACB Fruit Mix** works to brighten skin, leaving any signs of dullness behind! **ACB Fruit Mix** helps normalize the skin by weakening corneocyte adhesion along the stratum corneum to improve exfoliation and enhance cellular proliferation. Incorporating **ACB Fruit Mix** into final formulas provides consumers with the tactile proof of the product's efficacy, instantly softer, smoother skin. **ACB Fruit Mix** can further be used in personal care products to help moisturize the skin and decrease the appearance of wrinkles. **ACB Fruit Mix** is the way to smooth, wrinkle-free skin, truly revealing a rejuvenated complexion!



**Figure 1.** The comparison of therapeutic indices suggests that **ACB Fruit Mix** rates higher on the therapeutic index than both synthetic glycolic and lactic acids.

# ACB Fruit Mix

## EFFICACY DATA

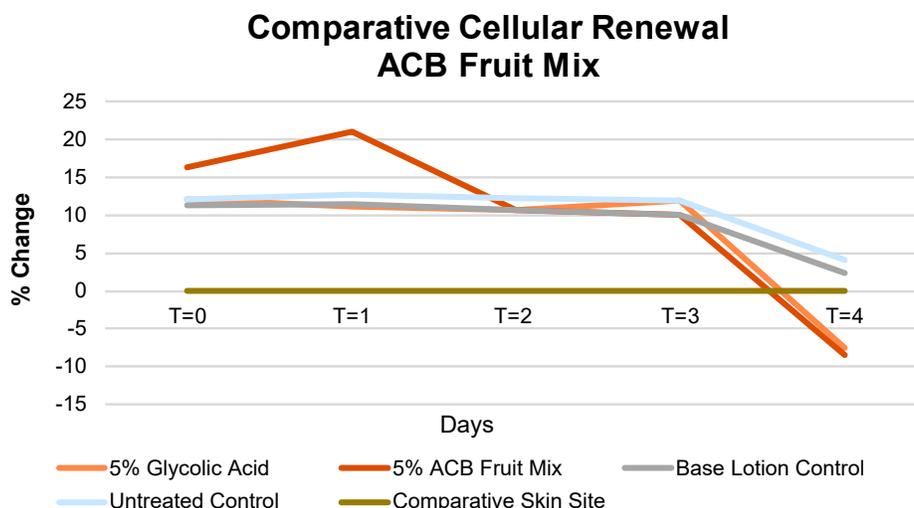
**ACB Fruit Mix** was evaluated for its ability to accelerate cell renewal by means of a traditional skin pigmentation assay protocol. Skin cells are frequently exposed to ultraviolet light damage and other chemical and environmental aggregates. Their death and replacement through cellular renewal processes minimize the potential longer-term harmful effects of these exposures. Aiding in the processes of cellular renewal can improve the skin's physical appearance as well as function as a protective barrier. Dermal Dye Max™ was used to induce skin pigmentation. The active ingredient in Dermal Dye Max™ is dihydroxyacetone (DHA), also known as glycerone, and is a simple saccharide.

Five volunteers, male and female, between the ages of 20 and 45 and who were known to be free of any skin pathologies participated in this study. Dermal Dye Max™ was applied to four identified test patches on the volar forearm. The dye was left to develop for 24 hours prior to baseline readings. A fifth skin patch was identified as the skin baseline control and no dye nor treatment were applied to this site. Post dye development and prior to the initial application, baseline DemaLab pigmentation index readings were taken for all five identified sites.

Approximately 0.2 g of each lotion treatment, 5% glycolic acid positive control, 5% **ACB Fruit Mix** and the base formula were applied to three 2cm x 2cm respective locations on the volar forearm. The fourth test site was left untreated as a dye baseline test site. Readings were taken every 24 hours until the active test site returned to baseline. After each daily reading, treatment of each respective test site was performed following the same parameters listed above.

**ACB Fruit Mix** was able to return the test site to baseline pigmentation readings in three days. The results indicate that **ACB Fruit Mix** is capable of increasing cellular renewal when compared to the untreated skin dye control site. Cellular renewal is beneficial for visibly improving skin tone and texture as well as aiding in the skin's function as a protective barrier from harmful chemical and environmental exposure that can lead to premature aging.

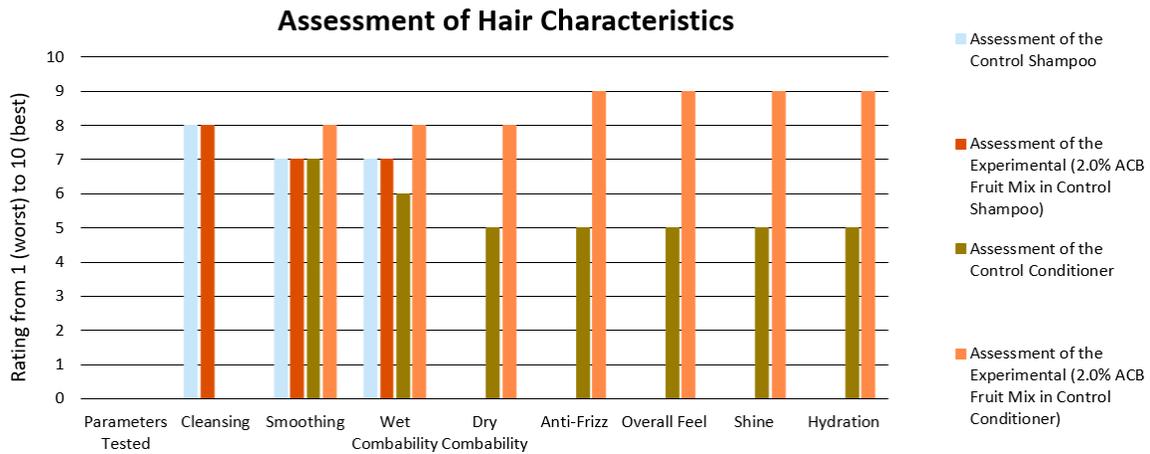
As seen in Figure 2, **ACB Fruit Mix** had the greatest percent change reduction back to baseline when compared to all other test controls. **ACB Fruit Mix** outperformed the glycolic acid positive control in the induction of cellular renewal and was able to return skin to the untreated baseline pigmentation readings. **ACB Fruit Mix** induced a 108.41% change in pigmentation over the course of 4 days compared to the glycolic acid positive control which only induced a 107.48% change in pigmentation. It can therefore be concluded that at normal use concentrations, **ACB Fruit Mix** contributes to cellular renewal, indicating a healthier, more vibrant skin tone and helping to reverse the signs of aging.



**Figure 2.** Cellular renewal results.

# ACB Fruit Mix

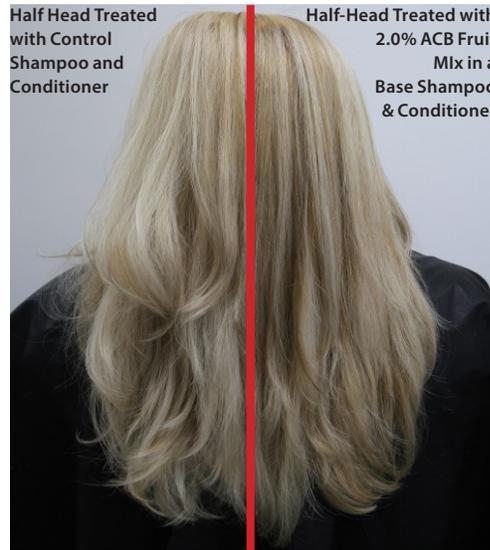
An *in-vivo* half head study was conducted to determine the comparison of a control shampoo vs. 2.0% **ACB Fruit Mix** in the control shampoo. Additionally, a comparison between the control conditioner and 2.0% **ACB Fruit Mix** in the control conditioner were reported. Each volunteer's hair was photographed 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 Fruit Mix** is capable of enhancing smoothing, wet and dry combability, anti-frizz, overall feel, shine and hydration making it ideal for all hair types



**Figure 3.** Rating of hair characteristics following sensory assessment.



**Figure 4.** Full head Baseline, Untreated Hair.

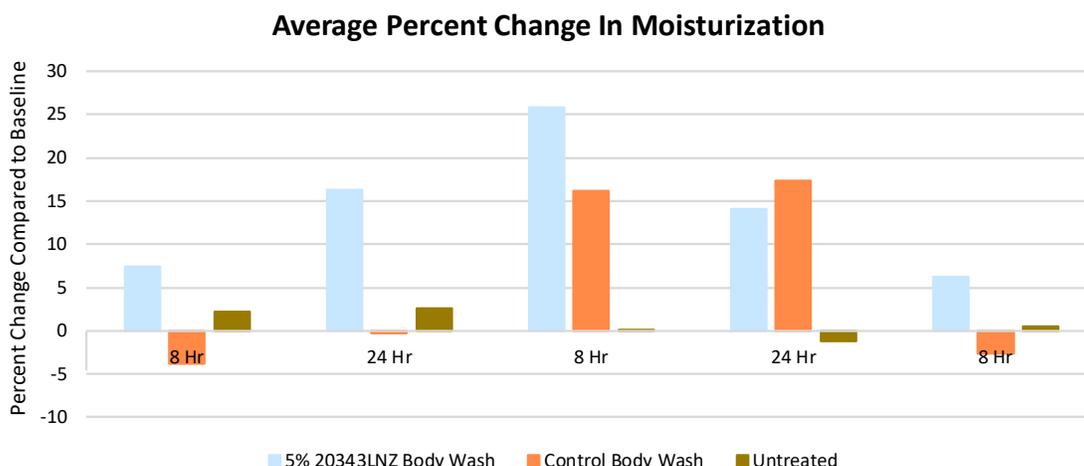


**Figure 5.** Half Head Treated.

# ACB Fruit Mix

An *in-vivo* moisturization study was conducted over a period of three days to evaluate the moisturization benefits of 5.0% **ACB Fruit Mix** in a body wash formulation. 10 m/f subjects between the ages of 23-45 participated in the study. Results of the rinse off study indicate **ACB Fruit Mix** was capable of improving day one 8 hour moisture levels by 7.5% and 16.4% at 24 hours when compared to the baseline measurements. On day two, moisturization was improved by 25.8% after 8 hours and 14.0% after 24 hours. Results indicate **ACB Fruit Mix** is capable of increasing moisturization over time when used in a rinse-off application.

Body washes were applied to the treatment areas and rubbed in a circular motion for a 15-second cleansing period. Once washed, each treatment area was rinsed with warm water and patted dry with a paper towel. After the application, hydration measurements were recorded at 15 minutes, 1 hour, 8 hours and 24 hours. The body wash procedure and readings were repeated in succession for a total of 3 days.



**Figure 6.** Average percent change in moisturization compared to baseline.