

Multifruit™ BSC

Your Natural Source for AHAs



SAP Code#: 124020

INCI Name: Water & *Vaccinium myrtillus* Fruit Extract & *Saccharum officinarum* (Sugar Cane) Extract & *Acer saccharum* (Sugar Maple) Extract & *Citrus aurantium dulcis* (Orange) Fruit Extract & *Citrus limon* (Lemon) Fruit Extract

Key Product Attributes:

- Natural source of AHAs from botanical extracts
- Maximum efficacy with minimum irritancy
- 55% active at a pH ~ 4.0
- Promotes healthy scalp (cell renewal)
- Promotes skin radiance

Product Information

Multifruit™ BSC is a concentrated blend of five botanical extracts: bilberry, sugar cane, sugar maple, orange, and lemon. These extracts contain several naturally occurring alpha hydroxy acids. Alpha hydroxy acids have been shown to promote smoother, younger looking skin by increasing the rate of cell renewal. Alpha hydroxy acids (AHAs) have been used in skin care for many years.

At first, they were used mainly by dermatologists as skin peeling and moisturizing agents; cosmetic companies have since “discovered” AHAs and their almost miraculous activity and formulate with them regularly in their skin care lines. Multifruit™ BSC is produced by taking several species of plants and running them through an exhaustive extraction process, which reduces color and odor, and concentrates the active principles. The extracts are blended at the following percentages:

| | | | |
|-------------|--------|------------|--------|
| Bilberry | 57.00% | Sugar Cane | 24.00% |
| Sugar Maple | 3.00% | Orange | 8.00% |
| Lemon | 8.00% | | |

Once blended, the extracts are concentrated by vacuum distillation until a specified concentration of actives is achieved. The product is then filtered to eliminate any particulate matter. Since Multifruit® BSC is a natural product it will contain a wide variety of residual natural substances, such as cellulose, carbohydrates, proteins, water soluble vitamins and minerals.

When the process is complete, the material contains the following concentrations of alpha hydroxy acids:

| | | | |
|---------------|--------|---------------|--------|
| Lactic Acid | 28-32% | Glycolic Acid | 12-17% |
| Citric Acid | 2-6% | Malic Acid | 1% max |
| Tartaric Acid | 1% max | | |

The primary action of AHAs lies in their keratolytic ability — they weaken bonds that hold dead skin cells together. When these bonds are weakened, the dead cells can be shed from the surface of the skin, resulting in skin that appears fresher, smoother and younger. Although the keratolytic activity of AHAs is very important, it is also interesting to note that many AHAs function as intermediates in several key metabolic pathways. Glycolysis, a process which involves the oxidation of glucose to pyruvic acid, is a key pathway of the cellular energy process. Hydrolysis of pyruvic acid leads to the formation of lactic acid. Lactic acid is a highly effective moisturizer. In studies, it has been shown to increase the synthesis of glycosaminoglycans. Glycolic acid exhibits the most keratolytic ability of any of the AHAs. It is glycolic acid that is responsible for the immediate skin softening effect felt by consumers when they first use an AHA product. Citric acid, when topically applied, stimulates collagen synthesis. Both tartaric and malic acid boost skin elasticity. To combine all of these AHAs results in a truly multifunctional material.

Natural Versus Synthetic Alpha Hydroxy Acids

The debate over natural versus synthetic AHAs has raged for several years. With the advent of Multifruit™ BSC, it seems that we have combined natural purity with excellent activity. While AHAs have a potential to be irritating to skin, they also effectively stimulate cell renewal. The Therapeutic Index¹ of AHAs shows the ratio of stimulation to irritation. The graph below shows that the activity of Multifruit™ BSC surpasses the activity of the synthetic lactic and glycolic acids. In Multifruit™ BSC, we have maximized the ability to stimulate cell renewal, while minimizing the potential for irritation.

Efficacy Studies — Dansyl Chloride Staining

Multifruit™ BSC was evaluated in both aqueous solutions (10%) and in a commercially available cosmetic cream (4%), via a dansyl chloride cell renewal protocol. Panelists were patched for 24 hours with 5% dansyl chloride in a petrolatum base. All subjects were examined on Day One with quartz mineral UV lamps (long and short wave) to ensure that the fluorescent stain had been taken up by the stratum corneum layers. Test materials were then applied to sites on the volar forearm.

At a 10% dilution, Multifruit™ BSC produced a 34% increase in cell renewal when compared to the untreated control site. Accordingly, there was a 143% increase in the number of squames generated. Evaluated at 4% in a commercial cream, Multifruit™ BSC increased cell turnover by 20% relative to the control formulation. This data collectively, correlates with Multifruit™ BSC's ability to stimulate cell renewal.

Therapeutic Index¹ of AHAs

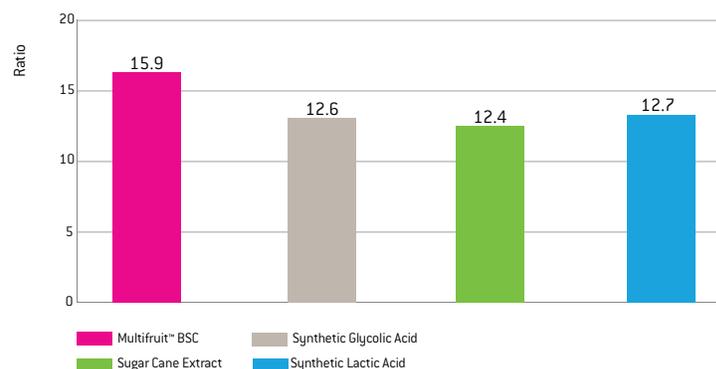


Fig. 1

10% Multifruit™ BSC in Aqueous Solution

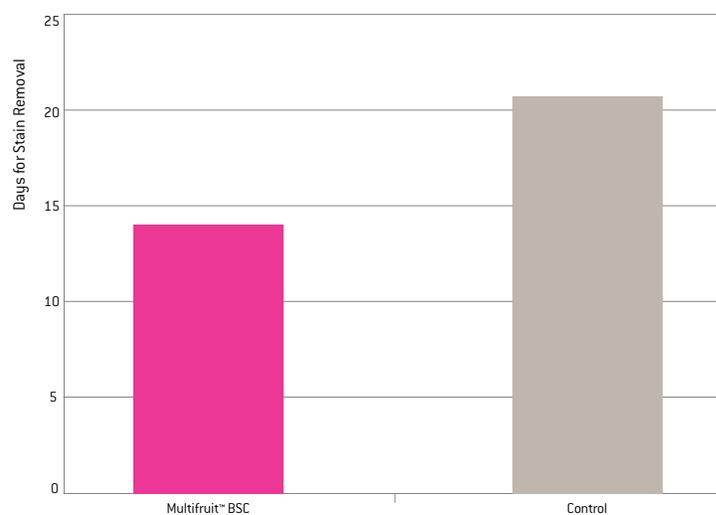


Fig. 2

4% Multifruit™ BSC in Commercial Cream

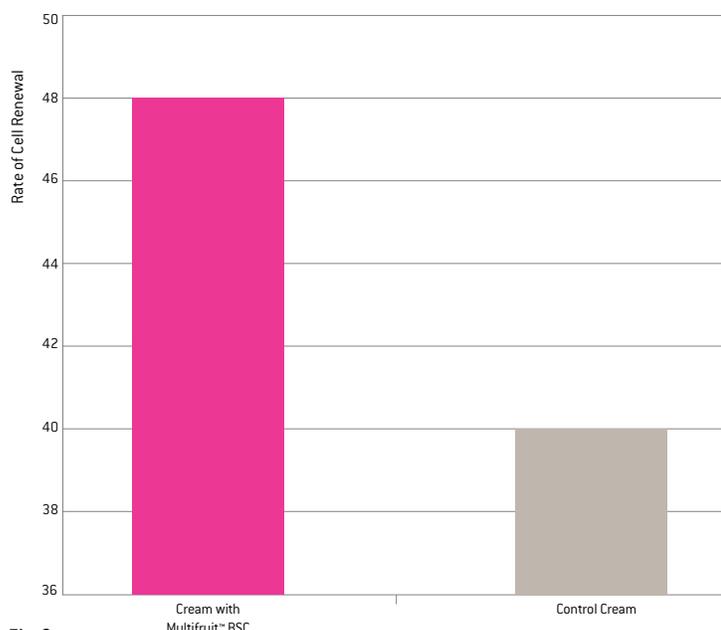


Fig. 3

Formulating Tips

Multifruit™ BSC is freely soluble in water, glycerine, and propylene glycol. It is immiscible with commonly used cosmetic oils.

- Add Multifruit™ BSC at the end of the procedure.
- Some formulations containing polymers such as Carbopol require that the Multifruit™ BSC be pre-diluted and/or neutralized.
- Always check compatibility with clays and other inorganic thickeners.

The best formulations for Multifruit™ BSC are nonionic creams and lotions.

Applications

- Skin care creams and lotions
- Facial toners and toner pads
- Cleanser
- Scalp treatments
- Neutralizing shampoos and conditioners

| Typical Properties | |
|------------------------|-----------------------------------|
| Appearance | Clear, pale purple-brown solution |
| Odor | Characteristic |
| Non-Volatile Matter | 60.0% Minimum |
| pH (Direct @ (25°C) | 4.0 - 5.0 |
| Lactic Acid | 28.0 - 32.0% |
| Glycolic Acid | 12.0 - 17.0% |
| Microbial Content | 500 opg, Maximum, No Pathogens |
| Recommended Use Levels | 5 - 15% |

References

1. Study showing Therapeutic Indices of Synthetic and Natural AHAs published by Walter Smith of Walter Smith Consultants.



USA
Lonza Personal Care
70 Tyler Place
South Plainfield, NJ 07080
Tel +1-908-412-6461
contact@lonza.com

Switzerland
Lonza Ltd
Muenchensteinerstrasse 38
4002 Basel
Tel +41 61 316 81 11
contact@lonza.com

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