ACB Botanical Sugar Complex

Starch
Powerful Ferment
Natural Carbohydrate
Simple Sugars
Enhanced Bioavailability

Code Number: 20039

INCI Name: Tapioca Starch & Lactobacillus Ferment Lysate
INCI Status: Conforms
REACH Status: Complies
CAS Number: 9005-25-8 & 68333-16-4
EINECS Number: 232-679-6 & N/A

Origin: Botanical
Processing:
GMO Free
No Ethoxylation
No Irradiation
No Sulphonation
Additives:
Preservatives: None
Antioxidants: None
Other additives: None
Solvents Used: Water
Appearance: Slightly Hazy to Hazy, Colorless to Light Yellow Liquid
Soluble/ Miscible: Water Soluble
86.4% Biodegradability
Microbial Count: <100 CFU/g, No Pathogens

Suggested Use Levels: 1.0 - 10.0%
Suggested Applications:
Hair Care, Wound Healing
Antioxidant, Nourishing

BACKGROUND

Hey Sugar, do we have some news for you? As sweet as the sound of this southern pet name, sugar can be used as a delicious, topical indulgence for your skin and hair! Using tapioca, a starch derived from the cassava plant, Active Concepts has created **ACB Botanical Sugar Complex** to provide a brand-differentiating product that's hard to resist. Now that's sweet.

Native to South America, tapioca has enjoyed a recent surge in popularity as a gluten-free thickening agent in the nutritional industry. Tapioca is enjoyed throughout the world as the primary constituent of bubble tea, but is also an essential staple in certain cultures due to its distinct composition of carbohydrates, vitamins, minerals and organic compounds. Rich in fiber, protein and "good" cholesterol, tapioca also boasts low levels of saturated fat, sodium and bad cholesterol.[1] However, those components are not what distinguishes tapioca for use in personal care products. As a complex starch, Cassava derived sugars contain an active carbohydrate profile that offers a wide range of cosmetic benefits. Traditional sugar based materials are used as exfoliators, but sugars derived from starch have undeniable function properties that are foolish to ignore.

Though Cassava has traditionally been used as an herbal remedy in which tapioca starch is applied directly to the skin as a treatment for sores. Today, tapioca starch is a vital tool used in developing countries to fight dehydration.[2] In addition, aside from the current documented properties of Cassava, the plant is being studied for a variety of its other byproducts, which have been found to be potentially useful in gene therapies for various cancers.

SCIENCE

Starches and sugars by nature contain a high proportion of carbohydrates. Leading Research shows that carbohydrates have innumerable cosmetic uses.

Benefits of **ACB Botanical Sugar Complex:**

- Ideal for Haircare
- Wound Healing
- Antioxidant

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From barrier protection to increasing cellular metabolism, carbohydrates can help promote healthy skin and hair. As a source of quality simple sugars, Tapioca starch is useful in increasing cellular viability by providing a nutrient rich environment for the skin's natural microbiome to flourish.[3] Through fermentation, the nutrients associated with long chain carbohydrates extracted from tapioca starch are more readily available for uptake into the skin and hair. The use of these refined sugars in formulation also plays on a new study confirming the use of complex natural sugars as antioxidants, as seen in our Oxygen Radical Absorbance Capacity results; **ACB Botanical Sugar Complex** brings antioxidant capability packaged in a nourishing, nonirritating raw material.

Sugars and long chain carbohydrates are abundant in nature, but the choice to use Cassava was simple. Not only is it sustainable for large-scale product manufacturing, but the plant itself contains an inexplicably high number of micronutrients such as Copper and Iron, which are vitally important as enzymatic oxidative cofactors, cell transporters, and nutrient absorption/utilization aids. As the industry continues to move away from animal-derived products, it is imperative to seek out viable alternative sources.

BENEFITS

Active Concepts has taken a forward approach in its product development, surveying nutritional, health and wellness trends in order to identify opportunities for potential cosmetic and personal care applications. **ACB Botanical Sugar Complex** harnesses the benefits of tapioca starch through the fermentation of cassava root with *Lactobacillus*. By fermenting cassava root, we are able to isolate tapioca starch to provide our customers with a product that offers antioxidant protection and acts as a wound healing agent. Additionally, the fermentation of botanicals results in enhanced bioavailability of the active, increasing the skin and hair benefits by enhancing the ability of these constituents to be more readily absorbed.

EFFICACY DATA

An ORAC Assay was conducted to evaluate the ability of **ACB Botanical Sugar Complex** to reduce oxidative stress. This assay is based upon the effect of peroxyl radicals generated from the thermal decomposition of 2,2′-azobis-2-methylpropanimidamide dihydrochloride on the signal intensity from the fluorescent probe, fluorescein, in the presence of an oxygen radical absorbing substance. Results indicate that the product provides intense protection against Reactive Oxygen species comparable to Trolox, an analogue of Vitamin E.

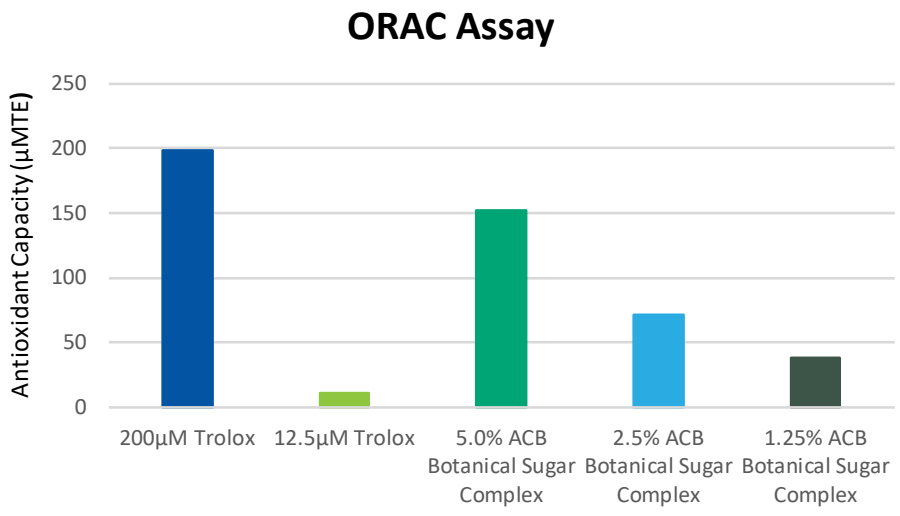

Figure 1. Antioxidant capacity.

ACB Botanical Sugar Complex

A scratch assay was conducted to assess the wound healing properties of **ACB Botanical Sugar Complex** treated, *in-vitro* cultured human dermal fibroblasts. **ACB Botanical Sugar Complex** was able to increase cell migration and close the scratch at a rate comparable to the positive control. The mechanisms of the cells in the *in-vitro* scratch assay mimic the mechanisms seen in *in-vivo* wound healing therefore we can be assured that our results are translatable outside the laboratory. **ACB Botanical Sugar Complex** was designed to be nourishing and rejuvenating. With the present study we can also be confident that this product has healing abilities and cell proliferation properties.

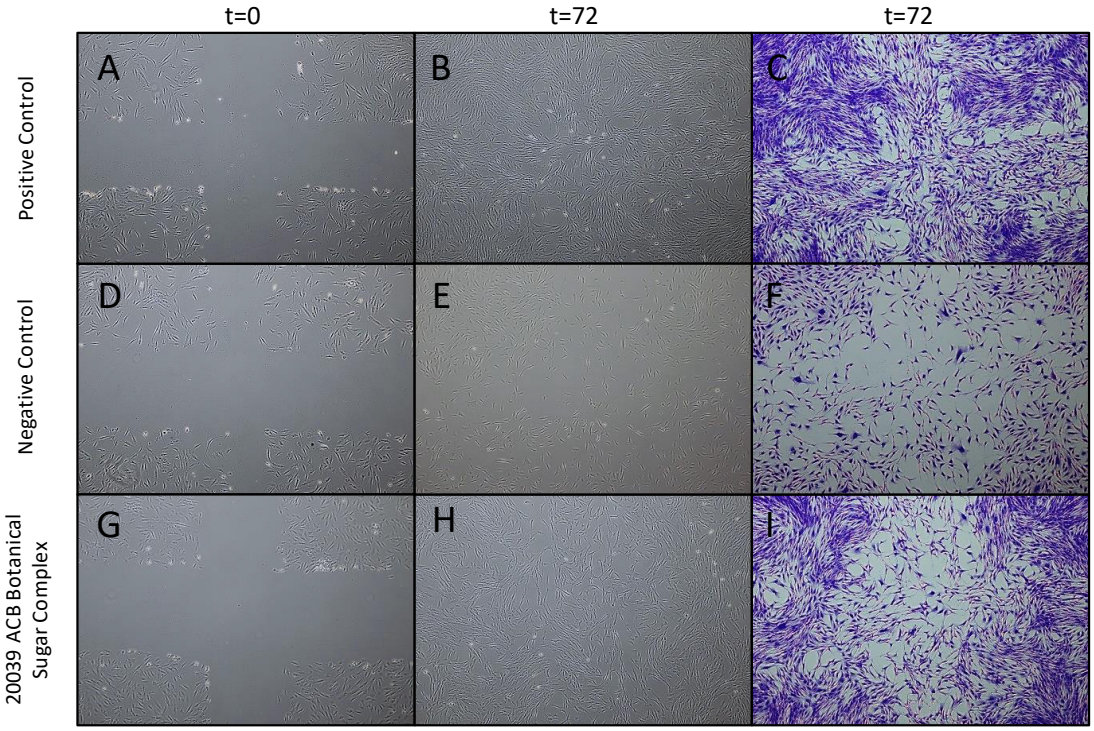

Figure 2. Images at t=0 hours (A, D, G) and t=72 hours (B, E, H) for **ACB Botanical Sugar Complex**, positive control, and negative control. At experiment completion (t=72 hours), cells were fixed in paraformaldehyde and stained with crystal violet (C, F, I).

References

1) Valles, M. et al. USPTO, US5496861, Cosmetics Containing enzymatically debranched starch.
2) Szetli, J. et al. 1982. Starch. Cyclodextrins in Food, Cosmetics and Toiletries. 34(11): 379-385
3) Kreopke, R. et al. USPTO, US20050255058 A1, Tapioca in cosmetic preparations.

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