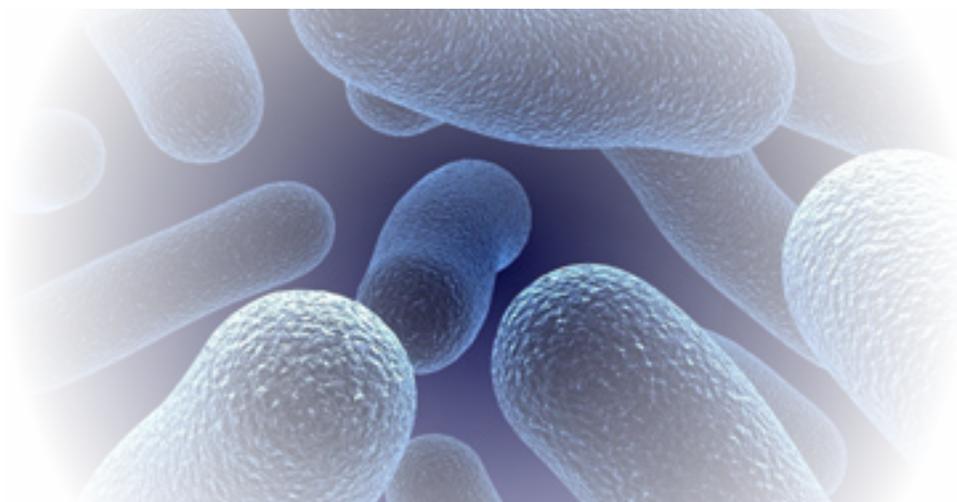


Probacillus Revive



capable of speeding up the
Repair Process
 optimizing moisture levels +
 simultaneously **increasing**
the rate of cellular renewal
 capitalize on **probiotic** marketability
trending in both skin and hair care product lines!

BACKGROUND

Transforming the health and wellness industry, probiotics treatments are now trending in both skin and hair care product lines. **Probacillus Revive** takes a new approach in delivering probiotics for use in personal care. This ingredient is capable of speeding skin repair by enhancing cellular renewal while also increasing collagen production to improve texture. Combined with the increased rate of exfoliation, the improvements in hydration will further minimize the appearance of wrinkles for additional anti-aging results. **Probacillus Revive** allows formulators and beauty product manufacturers to capitalize on probiotic trends!

SCIENCE

Prebiotics are non-digestible food ingredients that beneficially affect the host by selectively stimulating the growth and/or activity of bacteria. The oligosaccharides used in our process are derived from soy and chicory. The unique culture media greatly influences the active compounds which are produced by the bacteria. Prebiotics are not to be confused with probiotics. Probiotics are defined by The World Health Organization as a live microbial culture product which beneficially influences the health and nutrition of the host. In their truest sense, probiotics are bacteria.

Lactobacillus bulgaricus is perhaps the most popular of all probiotic species. *Lactobacillus bulgaricus* is also the species of bacteria that is used to ferment yogurt. In the food industry, yogurt is arguably the most popular vector for probiotics in the United States. Recognized mostly for their digestive benefits, recent clinical research indicates that probiotics confer systemic benefits which extend to the skin. In fact studies have shown that probiotics may even reduce symptoms of atopic dermatitis and eczema in infants and children.

Code Number: 16618

INCI Name: Lactobacillus Ferment Lysate

INCI Status: Conforms

REACH Status: Complies

CAS Number: 9015-54-7

EINECS Number: 295-635-5

Origin: Bacteria

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

Semi-Viscous Liquid

Soluble/ Miscible: Water Soluble

Ecological Information:

87.30% Biodegradable

Microbial Count: <100 opg,

No Pathogens

Suggested Use Levels: 1.00 - 10.00%

Suggested Applications: Probiotic,
 Cell Renewal, Moisturization,
 & Anti-Aging

Benefits of **Probacillus Revive:**

- Optimizes Moisture Levels
- Promotes Homeostasis
- Maintains Young, Healthy Looking Skin
- Capitalizes on Probiotic Trends
- Prebiotic Marketability

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BENEFITS

Given that live bacteria cannot be used in cosmetics, beauty manufacturers looking to capitalize on the benefits associated with probiotics have investigated the option of incorporating bacterial lysates into their formulations. The understanding being that these deliver similar probiotic benefits.

A truly unique approach to delivering probiotics, **Probacillus Revive** consists of isolates of *Lactobacillus bulgarius* which are intended to reinvigorate and renew the skin. Previous tactics used to manipulate bacteria for cosmetic gain have relied on stressing the organism. However, Active Concepts has taken a novel approach in creating **Probacillus Revive**. Instead of injuring the cells, the growth media is supplemented with prebiotics such as oligosaccharides. This allows the bacteria to thrive and produce synergistically active compounds which enhance cellular renewal to speed repair while also maximizing collagen synthesis to improve skin tone and elasticity. Ultimately, the result is a healthy and revived aesthetic.

EFFICACY

To measure improvements in cellular renewal an *in-vivo* dansyl chloride study was performed. In this study, an increase in cell renewal or total exfoliation was determined by comparing the number of days required for the Dansyl chloride to disappear from the volar forearm. 10% **Probacillus Revive** was added to an O/W emulsion, the exfoliating properties of this product were compared to the unloaded test vehicle and an untreated control. **Probacillus Revive** was shown to increase cell renewal by 13% compared to the untreated control and 9% better than the unloaded vehicle.

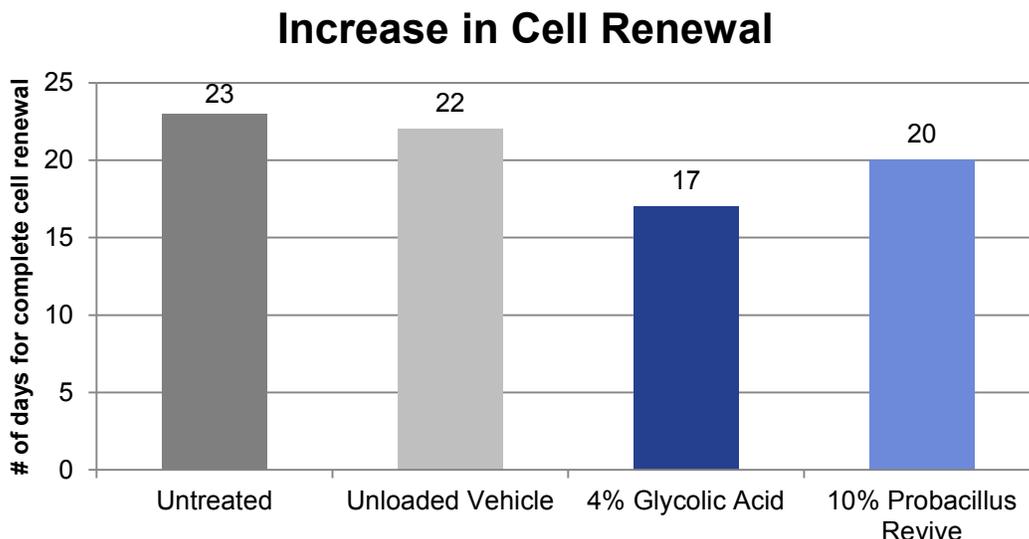


Figure 1. Increase in cell renewal following application of test materials.

Enhancing cellular renewal can help improve epidermal integrity and therefore enhance barrier function. This will ultimately lead to improvements in hydration. An *in-vivo* moisturization study was performed using a 9003 DPM Novameter to quantitatively determine improvements in hydration following treatments on the volar forearm with 10% **Probacillus Revive**, 10% glycerin and 0.05% hyaluronic acid in o/w emulsions. The concentration of hyaluronic acid tested was chosen based on comparable cost contribution to a formula when compared to the other ingredients. For added perspective, measurements of an untreated test site and a site treated with the unloaded vehicle were also recorded. Our findings indicate that **Probacillus Revive** improved hydration 18% better than glycerin and significantly better than the hyaluronic acid tested.

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Increase in Hydration

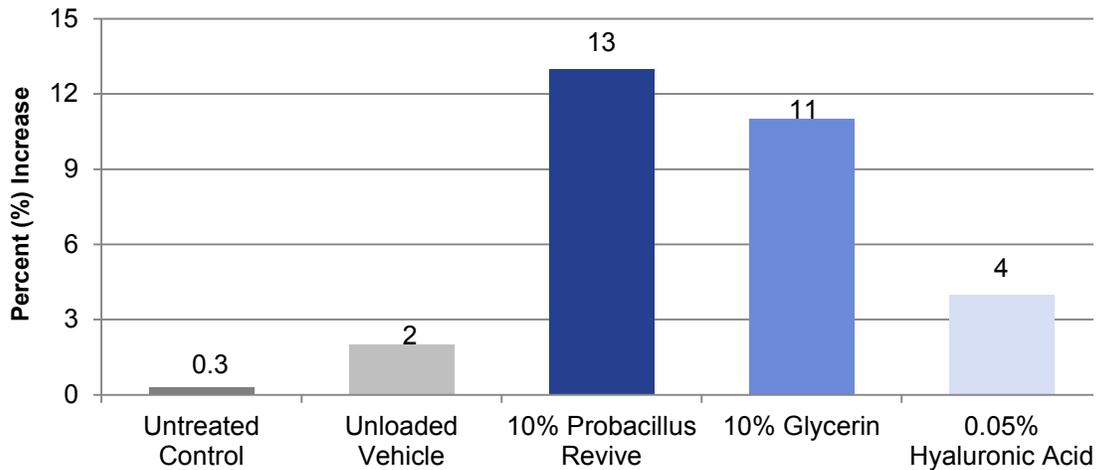


Figure 2. Percent increase in skin hydration following application of test materials.

Probacillus Revive was also shown to increase collagen production in a dose dependent fashion. In fact 4% **Probacillus Revive** increased collagen type I synthesis by 164%. Clearly these results suggest that **Probacillus Revive** is capable of effectively stimulating collagen production to minimize the appearance of wrinkles while improving skin tone and elasticity for superior anti-aging results.

Improvements in Collagen I Production

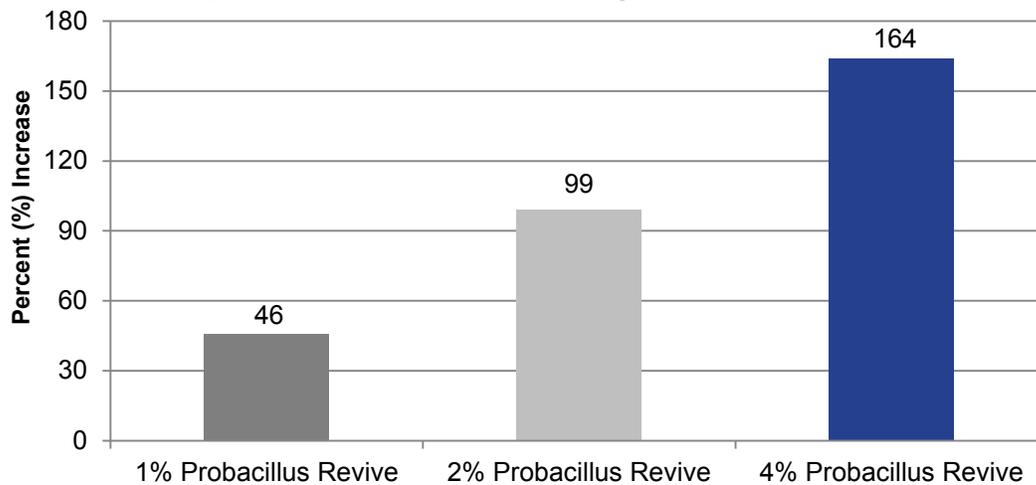


Figure 3. Percent increase in collagen production following application of **Probacillus Revive**.

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- 4) Macfarlane G.T., Steed, H. and Macfarlane, S. (2008). "Bacterial metabolism and health-related effects of galacto-oligosaccharides and other prebiotics". *Journal of Applied Microbiology*. 104 (2): 305-344.