

16907.

BiEau<sup>®</sup> Actif  
Birch

COMPLEX ACTIVE



VEGAN



COSMOS



IN VITRO



IN VIVO



ISO 16128



PRODUCT  
PASSPORT



THE FEATURES.

Water is essential for life, and critical to many personal care formulations for skin and hair. To provide brands with unique and effective botanical waters, Active Concepts has developed a line of botanical waters, capable of offering antioxidant protection and ensuring an isotonic cellular environment. BiEau<sup>®</sup> Actif Birch, derived from *Betula alba* leaf juice, can be used in a variety of cosmetic and personal care formulations to hydrate and provide antioxidant protection while stabilizing the cellular environment for the optimal health of skin and hair.

*Betula Alba Leaf Juice*

Actions

Antioxidant  
Isotonic Solution  
Moisturizing  
Sustainable

TECHNICAL DATA SHEET.

## THE REGULATION.

**INCI.** Betula Alba Leaf Juice  
**CAS.** 84012-15-7  
**EINECS.** 281-660-9  
**EUROPE.** Approved  
**USA.** Approved  
**CHINA.** Contact Us

## THE SPECIFICATION.

**Origin.** Botanical & Bacteria  
**Natural Antimicrobial.** Lactobacillus Ferment  
**Preservatives.** None  
**Solvents Used.** None  
**Soluble/Miscible.** Water Soluble  
**Appearance.** Clear to Hazy Liquid, Pale Yellow to Amber  
**Use Level.** 1- 10 %



## THE STORY.

Plants naturally utilize and bind water in their cells as a mechanism of survival. This cellular water or plant essence offers the ability to harness a nutritional, isotonic solution capable of nourishing the skin and hair in personal care applications. BiEau® Actif botanical waters combine advancements in sustainable beauty and leading-edge science, providing brands essential ingredients to support their unique aspirations. These botanical waters promote the natural balance of the skin, scalp, and hair while utilizing plant properties that work in harmony with the skin.

Botanical waters offer brand-differentiating properties, including unique origin stories, sustainability appreciation, and efficacious beauty benefits. Active Concepts maximizes raw material sourcing and creation with minimal environmental impact in the development of its BiEau® Actif botanical waters line. From cultured algal and mushroom cells to reanimated agricultural waste, the company redefines sustainability in personal care by promoting the utilization of agricultural byproducts.

Agricultural byproducts achieve new life in the beauty industry as components traditionally considered unwanted give rise to innovation. Birch trees, for example, offer untapped potential as sources of amino acids, vitamins, minerals, antioxidants, proteins, and enzymes.<sup>1</sup> Sustainable collection and utilization of birch material minimize the carbon footprint while offering the opportunity for brand differentiation. By utilizing parts of the birch tree—such as the bark, sap, or leaves<sup>2</sup>—without harming the tree’s overall integrity, sustainable practices maximize its properties in cosmetic applications.

## THE SCIENCE.

Cellular water is the living energy for plant survival. Nutrient transport, growth, and chemical processes such as photosynthesis rely on water functionality. As water travels through the tree’s roots and throughout its cells, it circulates minerals and nutrients, reaching the leaves and blossoms. Active Concepts has harnessed solar energy to isolate the nutrient-rich water of *Betula alba* leaves, creating a bioactive cellular water with antioxidant properties.

*Betula alba*, also known as White Birch, is an abundant source of nutrients, including succinic acid, a natural acid involved in cellular metabolism.<sup>3</sup> Succinic acid plays a key role in the Krebs cycle, which is essential for energy production in cells.<sup>4</sup> It acts as an intermediate in the cycle and donates electrons to the electron transport chain, protecting against oxidative stress by modulating reactive oxygen species (ROS). ROS can damage cells and contribute to the formation of fine lines, wrinkles, and premature aging of the skin.

Antioxidants, like those found in *Betula alba*, help neutralize free radicals, preventing damage to DNA and reducing the effects of environmental pollution and photo-aging.<sup>2</sup> These antioxidants are essential in skincare, as they help maintain the integrity of skin cells and protect against external aggressors. By providing an isotonic solution with minerals and natural components, BiEau® Actif Birch enhances the affinity with skin cells and maintains a healthy balance. Isotonic solutions are beneficial because they preserve the natural structure of skin cells and prevent dehydration or overhydration, ensuring a balanced environment that supports the skin’s protective barrier.

BiEau® Actif Birch utilizes cellular plant essence to deliver isotonic nutrients, promoting rejuvenation for the skin and hair. As the skin is composed of approximately 60% water,<sup>5</sup> an isotonic solution helps harmonize the water content in skin cells, ensuring they remain healthy, intact, and resistant to external damage. This innovative approach offers antioxidant protection while nurturing the skin’s natural balance.

## THE BENEFITS.

### Skin

**Moisturization** 24 Hour Moisturization



**Isotonic Solution** Osmotic Pressure Cell Membrane Comparison



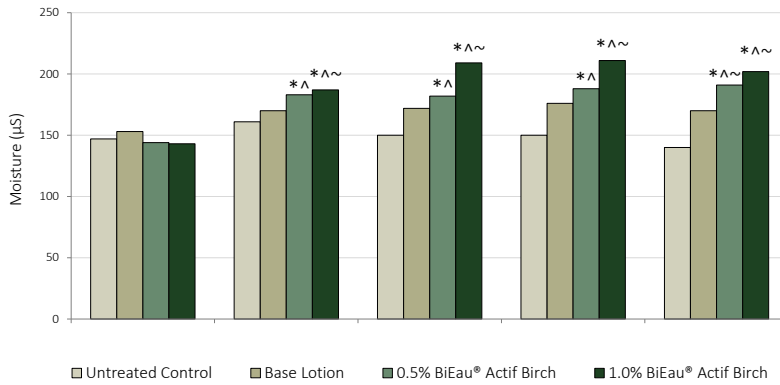
**Antioxidant** ORAC Assay



## THE EFFICACY.

### 24 Hour Moisturization Assay

An *in vivo* moisturization study was conducted to evaluate the immediate and short-term skin hydrating properties of BiEau® Actif Birch tested at 0.5% and 1.0% over a 24-hour period. Proper hydration maintains the skin's structural and functional integrity and contributes to the appearance of healthier-looking skin.



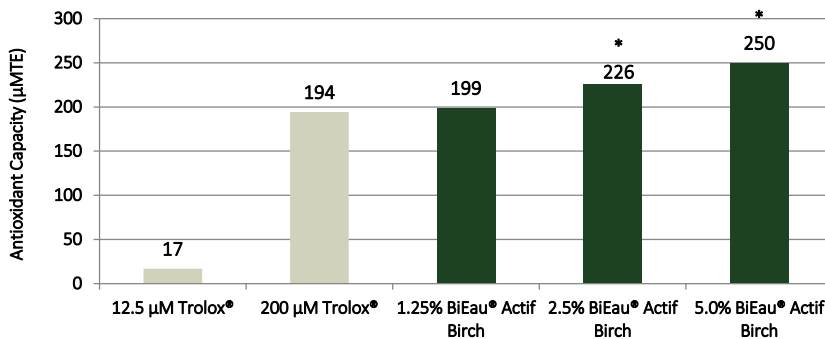
Demonstrated increase in skin hydration by +33% in 24 hours (tested at 0.5%)

### Moisturizing.

Fast-acting hydration & lasting moisturization benefits

### ORAC Assay.

Oxygen Radical Absorbance Capacity (ORAC) assay was conducted *in chemico* to assess the antioxidant capacity of BiEau® Actif Birch in comparison to Trolox®, a known vitamin E analog.



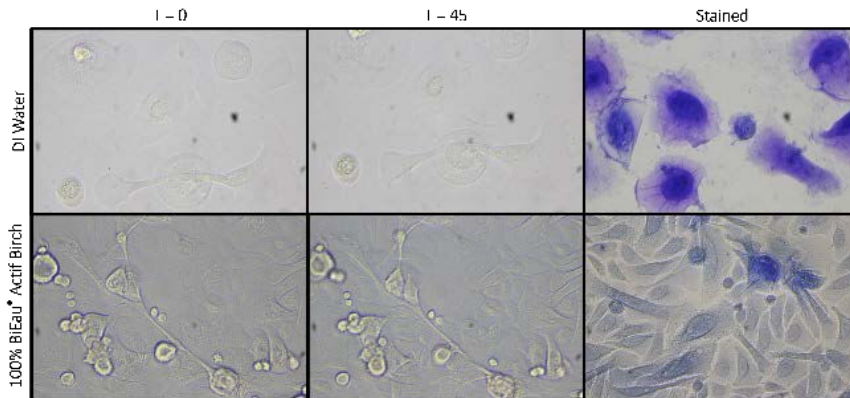
Exhibited significantly greater antioxidant activity than 200µM Trolox® (at 2.5% & 5.0%)

### Antioxidant.

Free radical quenching abilities & Cellular protection

## Osmotic Pressure Cell Membrane Comparison

An Osmotic Pressure Cell Membrane Comparisons Assay was conducted to assess the effect of 100% BiEau® Actif Birch on keratinocyte membrane integrity and cell volume when compared to DI Water. Keratinocytes were seeded into a 24-well plate and allowed to grow to confluency in complete media, before being washed and treated with either DI Water or 100% BiEau® Actif Birch. Images were taken at (T=0) and after 45 minutes using a 40x objective. After cells were fixed using paraformaldehyde, they were stained using Crystal Violet, washed, and imaged to determine any variation in their size. BiEau® Actif Birch provides a unique ability to deliver nutrients without causing a major shift to the osmolality gradient effecting intracellular tonicity or volume.



Cells maintained volume and did not experience significant swelling (tested at 100%)

**Isotonic.**

Nutrient rich alternative to DI water

### References:

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3. Sawa, Kenta, et al. "Krebs cycle intermediates protective against oxidative stress by modulating the level of reactive oxygen species in neuronal HT22 cells." Antioxidants 6.1 (2017): 21.
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5. Mitchell, H.H., Hamilton, T.S., Steggerda, F.R., and Bean, H.W., 1945, The chemical composition of the adult human body and its bearing on the biochemistry of growth: Journal of Biological Chemistry, v. 158, issue 3, p. 625-637.

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