ACB Quinoa Protein

Enhances Combability
Increases Managablilty
Conditioning
Increases Volume
Antioxidants
Improves Shine
Film-Forming
Improves Barrier Function
Vitamin A
Nourishing

BACKGROUND

In recent years Quinoa has exploded into the nutritional market touted as the next superfood. It has quickly become a staple grain to replace wheat for gluten intolerance and sensitivities. Though quinoa is far from a being considered a "new" material for nutritional or industrial use.

Quinoa (Chenopodium quinoa) has been cultivated in the Andes Mountains of South America for over 5,000 years. The Incas referred to it as the "Mother Grain" and considered it to be a sacred plant, due to its high nutritional value and ability to flourish at high altitudes in cold, dry climates. The quinoa plant is a perennial, which can grow as tall as twelve feet high.[3] The leaves of the plant are dull and triangular, while the seeds are enclosed in a hard, shiny husk. The seeds of the quinoa plant are typically a pale yellow color, but the color can vary from shades of orange, pink, red, purple, and black.

Quinoa is commonly considered to be the single species within the Chenopodiaceae family, and is a unique plant due to its high nutritional value. In part thanks to its new found popularity, new studies have come to light revealing several previously unknown facts about the grain. For example, in comparison to other grains, quinoa is exceptionally high in proteins resulting in a good balance of essential amino acids. [2]

SCIENCE

Quinoa is generally used as a cereal crop, but since it does not fall within the Poaceae family, like corn and wheat, it has been classified as a pseudo cereal or super cereal. It typically has twice the amount of proteins than other cereals such as barley, corn, and rice. Quinoa is unique in that its amino acid composition differs from that of traditional grains. This "super cereal" contains a higher total content of essential amino acids such as methionine, cysteine, and lysine.[2] In addition, the plant displays potent antioxidant capabilities that far exceed its nutritional counterparts, with the ability to swiftly deplete free radicals in vitro.[1] **ACB Quinoa Protein**, created utilizing enzymatic hydrolysis, proivdes exceptional benefits for hair and skin in a variety of applications.

Code Number: 20037

INCI Name: Hydrolyzed Quinoa
INCI Status: Conforms
REACH Status: Complies
CAS Number: 100209-45-8
EINECS Number: 309-353-8

Origin: Botanical
Processing:
GMO Free
No Ethoxylation
No Irradiation
No Sulphonation
Additives:
Preservatives: None
Antioxidants: None
Other additives: None
Solvents Used: Water
Appearance: Clear to Slightly Hazy Liquid
Soluble/ Miscible: Water Soluble
Ecological Information:
87.3% Biodegradability
Microbial Count: <100 CFU/g, No Pathogens
Suggested Use Levels: 1.0 – 10.0%
Suggested Applications: Moisturizing, Film-Forming, Nourishing, Conditioning, Volumizing, Anti-Aging

Benefits of **ACB Quinoa Protein**:

- Moisturizing Super-Food
- Volumizing Protein
- Brand Differentiation
- Improves Barrier Function
- Enhances Hair Manageability
- Noticeably Improves Hair Shine

ACB Quinoa Protein

BENEFITS

The high protein content found in quinoa provides exceptional skin hydration, skin softening and emollient properties. Quinoa is known to provide strong anti-irritant, anti-oxidant, and repairing properties. The high amino acid content will help to restore hydration to the epidermis or the cuticle of the hair. This highly marketable and unique protein is a must have for a variety of formulations, **ACB Quinoa Protein** was designed for all skin and hair types, but is particularly suitable for skin or hair that is excessively dry.

EFFICACY DATA

As shown in figure 1, **ACB Quinoa Protein** increased cell metabolism. An increase in fluorescent signal indicates an increase in cellular metabolism and viability. **ACB Quinoa Protein** does not appear to have negative effects on cellular metabolism and can safely be used in cosmetic materials. **ACB Quinoa Protein** exhibited significant effects on cellular metabolism compared to the control. Cellular metabolism results are expressed as a percentage of the control.

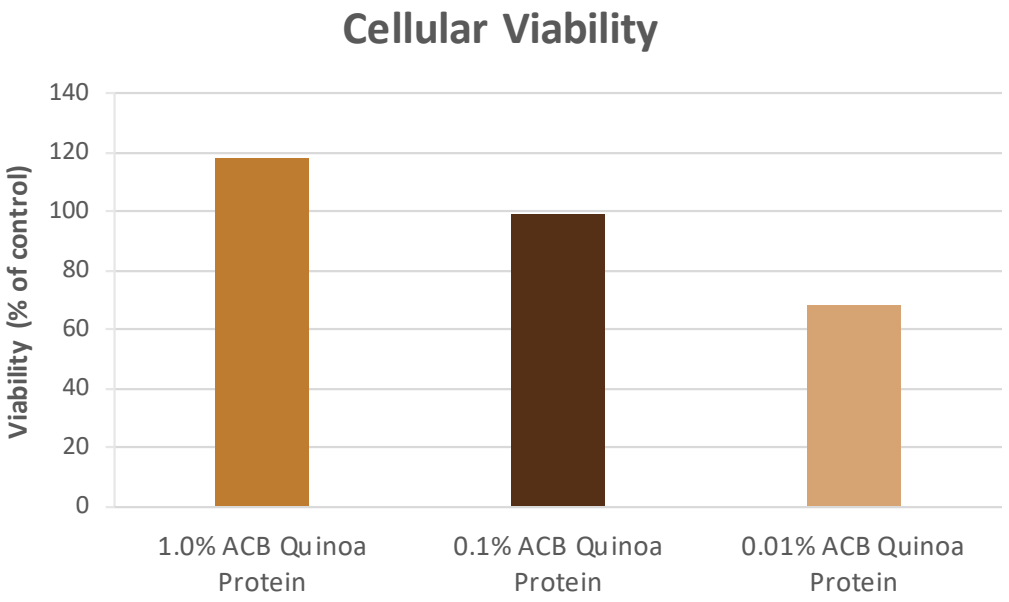
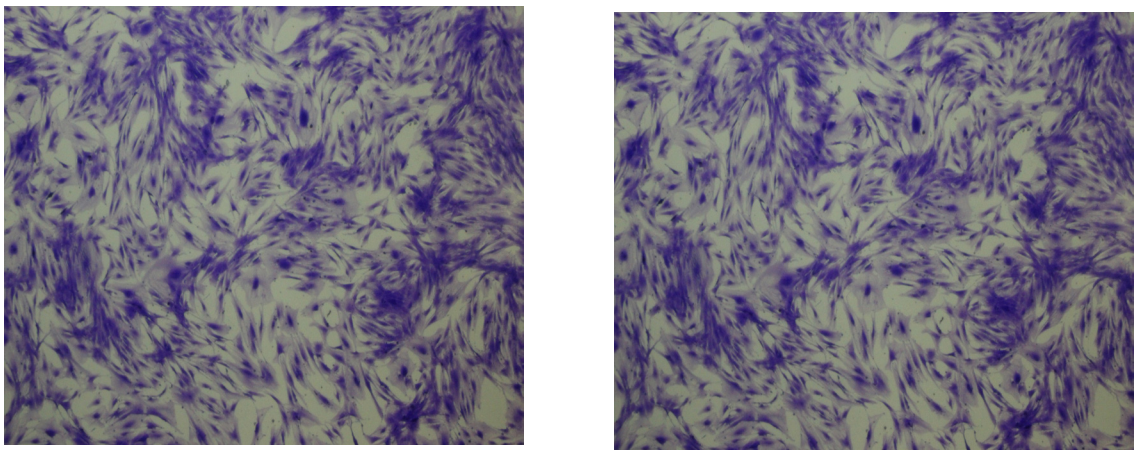


Figure 1. Cellular viability assay



Above are two micrographs, they are representative of the cellular viability of **ACB Quinoa Protein**. The micrograph on the left is denser and more robust after treatment, indicating an increase in cellular proliferation and viability in comparison to the control.

ACB Quinoa Protein

As shown in Figure 2, results indicate continuous improvements in the barrier of the skin throughout the 3 week test period. After one week, the solution containing 2.0% **ACB Quinoa Protein** decreased TEWL 15% more effectively than the base lotion alone. After three weeks, the solution containing 2.0% **ACB Quinoa Protein** demonstrated even more effective barrier protection, decreasing TEWL 21% better than the base lotion alone. When compared to the untreated control, the solution containing 2.0% **ACB Quinoa Protein** decreased transepidermal water loss by 26% after one week and by 22% after three weeks.

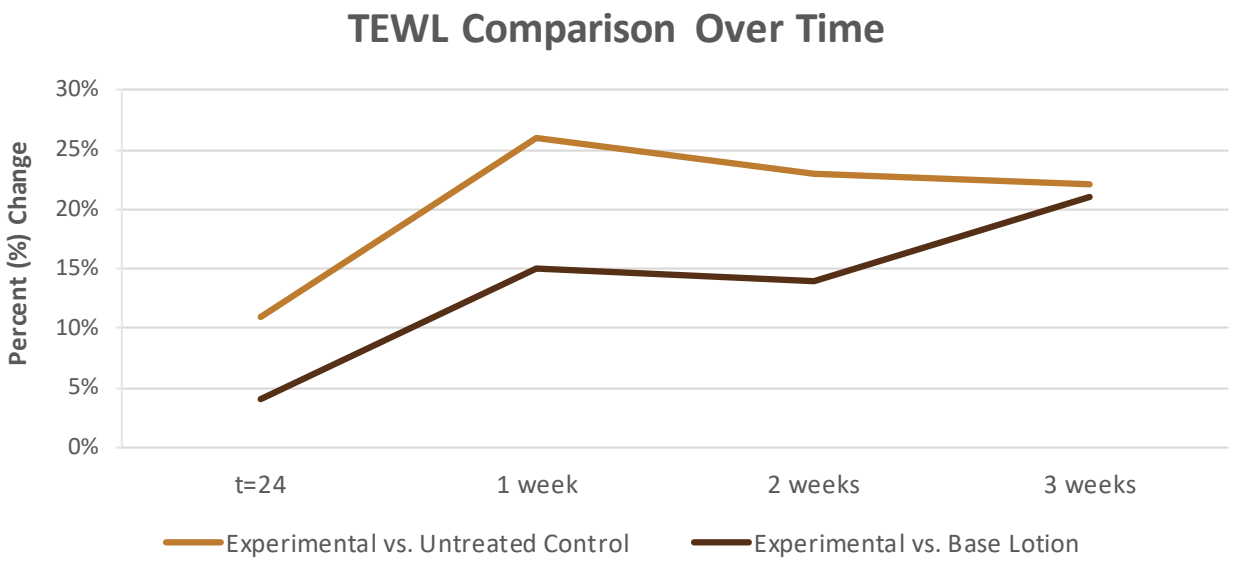


Figure 2. Improvements in barrier function following application of the test materials after a period of 3 weeks.

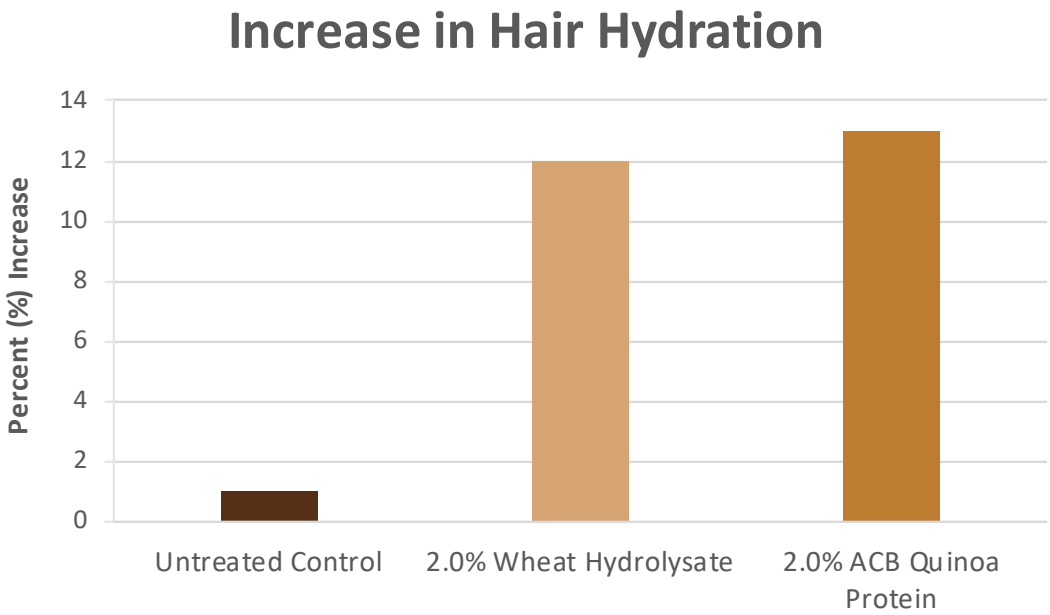


Figure 3. Percent increase in hair hydration using **ACB Quinoa Protein** and Wheat Hydrolysate

Figure 3 displays an increase in hair hydration for **ACB Quinoa Protein**. The naturally rich amino acid content of quinoa utilized in the production of **ACB Quinoa Protein** offers a protein hydrolysate capable of producing hair-hydrating benefits. **ACB Quinoa Protein** increases hair hydration by 11.0% more than wheat hydrolysate and 92.6% more than the untreated control.

ACB Quinoa Protein

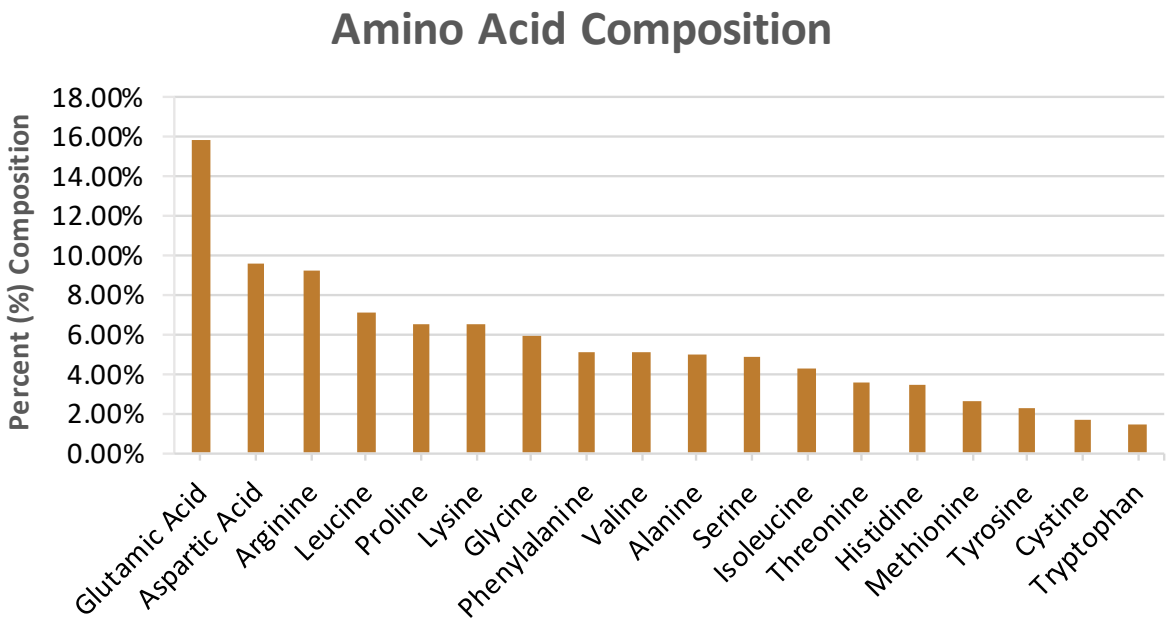


Figure 4. Typical amino acid composition

As seen in Figure 4, quinoa offers a unique variety and concentration of amino acids. This protein is a stable and reliable replacement for traditional grains with the added benefit of a raw material that exhibits, on average a superior amino acid composition.

References

1) Nsimba et al. 2008. Food Chemistry. Antioxidant activity of various extracts and fractions of Chenopodium quinoa and Amaranthus spp. seeds. 106(2): 760-766
2) Ruales et al. 1992. Plant Foods for Human Nutrition. Nutritional quality of the protein in quinoa (Chenopodium quinoa, willd) seeds. 42(1): 1-11
3) Carasco et al. 2006. Food Reviews International. Nutritional Value and Use of the Andean Crops Quinoa (Chenopodium quinoa) and Kaniwa (Chenopodium pallidicaule). 19(1-2)
4) Ruales et al 1992. Food Chemistry. Content of fat, vitamins and minerals in quinoa (Chenopodium Quinoa, Willd) seeds. 48(2): 131-136

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