Amaranth Pro ECT
Velvet Flower Protein for Conditioned Skin & Hair

INCI Name: Hydrolyzed Amaranth Protein
SAP Code#: 139200

Key Product Attributes:
- Organically based hydrolyzed amaranth protein
- Film forming
- Moisturizing
- Non-GMO based
- Good compatibility in all cosmetic formulations

Introduction

Due to consumers’ growing awareness of naturally derived ingredients in finished products, they are constantly seeking out ‘green’ alternatives to standard, synthetic based formulations. Amaranth Pro ECT is hydrolyzed amaranth protein, ideally suited to meet consumer’s expectations.

Amaranth Pro ECT is based on an organic source of amaranth grain from Peru, which is high in colloidal peptides and carbohydrates. Organic sources of materials are an important healthy choice as they are produced without the use of antibiotics, added growth hormones, or pesticides. According to research published in the Journal of Agricultural and Food Chemistry, organic foods have 50% to 60% higher levels of antioxidants compared to non-organic foods. Amaranth is free of allergenic gluten and is a good source of vitamins and minerals, offering nine essential amino acids that cannot be synthesized by skin or hair.
Background Information

Amaranth [Amaranthus caudatus] is a beautiful, highly nutritious plant with a colorful history used in various cultures in some unique ways. The name amaranth hails from the Greek word for “never-fading flower.” The plant is actually an herb, not a “true” grain and is a relative of the garden plant known as Cockscomb, and the common wild plant known as lamb’s-quarters. The name amaranth is also used for a white chef’s hat worn in the Philippines.

Typical Amaranth plants are bushy, growing 5 to 7 feet tall, with broad leaves and displaying a bright, showy flower head of small red or magenta, clover like flowers which constitute the plant’s exquisite, feathery plumes. The seed heads are quite striking as well; resembling corn tassels, but are somewhat fuller. Aside from Amaranth being such an attractive plant it is extremely adaptable to adverse growing conditions, resisting heat and drought and extremely easy to grow.

Due to this robust nature, Amaranth was a staple food in the diets of pre-Columbian Aztecs, who believed it had supernatural powers and, therefore, incorporated it into their religious ceremonies. In Mexico it is popped and mixed with a sugar solution to make a confection called “alegria” (happiness). In India amaranth is known as “rajeera” (the King’s grain) and is used in confections called “laddoos,” which are similar to Mexican “alegria.” Peruvians use fermented amaranth seed to make “chicha” or beer. In the Cusco area the flowers are used to treat toothaches and fevers and as a food colorant for maize and quinoa. In Nepal, amaranth seeds are eaten as gruel called “sattoo” or milled into flour to make chappatis. In Ecuador, the flowers are boiled then the colored boiling water is added to “aquateinte” rum to create a drink that “purifies the blood.”

Amaranth has been gaining popularity in the U.S. and although it is now grown in Colorado, Illinois, Nebraska and other states, it is still not a mainstream food. It is found in many natural food stores and the flour is often used in baked goods.

Product Information

Comparison of Nine Essential Amino Acid Profiles of Whole Milk and Amaranth

These essential amino acids are required for promoting wound healing, antioxidant properties, lipolysis, water balance, immune stimulation, and skin revitalization. They collectively act to prevent hair from becoming dry and dull as one ages. In fact, the National Academy of Sciences called amaranth one of the best sources of vegetable protein available, having a better amino acid profile than cow’s milk or soy! The table below shows the comparison of nine essential amino acids between whole milk and amaranth:

<table>
<thead>
<tr>
<th>Nine Essential Amino Acids</th>
<th>Whole Milk</th>
<th>Amaranth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threonine</td>
<td>0.15</td>
<td>0.56</td>
</tr>
<tr>
<td>Valine</td>
<td>0.15</td>
<td>0.69</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.08</td>
<td>0.23</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>0.16</td>
<td>0.59</td>
</tr>
<tr>
<td>Leucine</td>
<td>0.43</td>
<td>0.89</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>0.13</td>
<td>0.55</td>
</tr>
<tr>
<td>Lysine</td>
<td>0.32</td>
<td>0.75</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.03</td>
<td>0.39</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.06</td>
<td>0.18</td>
</tr>
</tbody>
</table>

General Manufacturing Process

Amaranth Pro ECT is made by taking the amaranth grain in water and enzymatically hydrolyzing the protein to produce a colloidal solution; further filtration removes the insoluble components resulting in a clear, aqueous solution, high in hydrolyzed amaranth protein.

Efficacy

Amaranth Pro ECT

In Vivo Moisturization Study

An in vivo study was conducted on 30 female panelists to determine the moisturization efficacy of a 3% Amaranth Pro ECT clear gel formulation compared to the control (gel formulation without Amaranth Pro ECT). Test sites were defined on the panelists’ volar forearms and 0.002ml of the test material was applied to test sites twice daily. Corneometric readings were taken at baseline, 7 days and 14 days after product application.
In Vivo Moisturization Study

![Graph showing the % increase in moisturization from baseline for 3% Amaranth Pro ECT and Control over 7 and 14 days.]

**% increase in moisturization from baseline**

- 9%
- 8%
- 7%
- 6%
- 5%
- 4%
- 3%
- 2%
- 1%
- 0%

**Fig. 1**

3% Amaranth Pro ECT in a gel formulation enhanced moisturization by 8% compared to the untreated site at both 7 and 14 days.

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**Safety Profile**

- EpiOcular (Product tested at 100%) | Non-Irritating, Minimal
- EpiDerm (Product tested at 100%) | Non-Irritating
- RIPT (Product tested at 100%) | Did not demonstrate a potential for eliciting dermal irritation or sensitization

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**Conclusion**

Consumers demand and seek natural ingredients in all applications which creates multiple challenges for cosmetic formulators. Formulators are looking for natural ways to enhance moisturizing and film forming properties, and also to offer more efficient foam boosters in cleansing applications, producing rich lather in the presence of salt and sebum. Amaranth Pro ECT, hydrolyzed amaranth protein, is suitable for use in any cosmetic formulation where moisturizing, film forming properties are desired. Amaranth Pro ECT offers enhanced substantivity to skin and hair, leaving behind an elegant, conditioned feel after rinsing.

**Typical Properties**

<table>
<thead>
<tr>
<th>INCI Name</th>
<th>Hydrolyzed Amaranth Protein</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP Code#</td>
<td>139200</td>
</tr>
<tr>
<td>Appearance</td>
<td>Clear amber liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>Characteristic, Fruity note</td>
</tr>
<tr>
<td>Color (Gardner)</td>
<td>10 Maximum</td>
</tr>
<tr>
<td>Non-Volatile Matter (1g - 16hr - 105°C)</td>
<td>8% Minimum</td>
</tr>
<tr>
<td>pH (Direct @ 25°C)</td>
<td>4.0 – 6.0</td>
</tr>
<tr>
<td>Ash (800°C)</td>
<td>1.5% Maximum</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>1.3% Minimum</td>
</tr>
<tr>
<td>Microbial Content</td>
<td>500 opg Maximum, No pathogens</td>
</tr>
<tr>
<td>Preservative System</td>
<td>1.25 - 1.35% Salix nigra (Willow) Bark Extract, 0.4 - 0.6% Benzyl Alcohol</td>
</tr>
</tbody>
</table>

**Recommended Use Levels**

5 - 20%
References

8. Sun Gyoo Park, et. al. Two possible classifications of facial skin type by two parameters in Korean women: sebum excretion rate (SER) and skin surface relief (SSR), J. Skin Research & Tech Vol. 5 Issue 3, August 1999, p 189

USA
Lonza Consumer Care
70 Tyler Place
South Plainfield, NJ 07080
Tel +1 908 561 5200

Switzerland
Lonza Ltd
Muenchensteinerstrasse 38
4002 Basel
Tel +41 61 316 81 11

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