AcquaSeal® Algae
Defends Against Aging Skin + Cellular Hydration + Anti-Inflammation

Tomorrow’s Vision... Today!®
AcquaSeal® Algae

Technical Information

Product Code: 20852

INCI Name: Chlamydomonas Reinhardtii Extract

INCI Status: Conforms

Suggested Use Level: 1.0-10.0%

Suggested Applications: Hydrating, Cellular Renewal, Anti-Inflammation
Sustainably sourced ingredients are becoming more popular among consumers.

Ingredients that are sourced from nature, inspired by nature, bio-based, are gaining traction in the global market.

Active Concepts’ focus on sustainable technology and green chemistry piqued our interest in algae derivatives as a sustainable and natural-based source of cosmetic benefits.

Green algae have a great potential to generate oils and other valuable byproducts in a sustainable fashion.
Green algae produces an array of unique bioactive, complex lipids and fatty acids

**AcquaSeal® Algae** contains algal lipid fractions derived from the green algae *Chlamydomonas reinhardtii*

With proprietary technology, lipid fractions from the chloroplasts in *Chlamydomonas reinhardtii* are isolated

Providing cellular renewal, cellular hydration, cellular proliferation, and anti-inflammation benefits to defend against aging skin
A youthful and healthy appearance is sought after by many and cosmetics can both reverse and prevent some of the age associated changes in skin appearance.

These corrections require intervention in molecular and cellular processes.

AcquaSeal® Algae is a unique, algae derived product designed to target skin aging at a genomic, proteomic, and metabolomic level for youthful, more beautiful skin!
AcquaSeal® Algae

Benefits

✓ Hydrating
✓ Cellular Renewal
✓ Anti-Inflammation
✓ Cellular Proliferation
AcquaSeal® Algae

Cellular Hydration

Protocol

- Superficial stratum corneum cells were isolated from lower leg of 10 test subjects
- Sample weights were taken before treatment started and after one week of treatment
- Treatments were applied twice per day for one week
- The total amount of water capable of being adsorbed by the cells and the rate of water loss would be indicative of the ability of the collected cells to maintain moisture
- **AcquaSeal® Algae** had an increased water uptake compared to the vehicle treated control

![Water Holding Capacity Chart](image)

**Figure 1.** Average weight of skin cells for water holding capacity.
Afterwards, the fully hydrated cell samples from the above experiment were relocated to an isolated chamber at a humidity of less than 5% and the weight of the samples was monitored over time.

The total amount of water adsorbed by the cells and the rate of water loss would be indicative of the ability of the collected cells to maintain moisture.

AcquaSeal® Algae treated samples retained about 30% more of the adsorbed water when compared to the untreated and vehicle.

**Figure 2.** Average weight of skin cells for cellular water loss.
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Protocol

- Fibroblasts are connective tissue cells that secrete collagen, glycoproteins, and other macromolecules for skin health and maintenance
- Human normal fibroblasts were grown in a medium supplemented with nothing (Control), Fibroblast Growth Factor, or AcquaSeal® Algae
- AcquaSeal® Algae showed a positive effect on fibroblast proliferation

**Cellular Proliferation**

**Figure 3.** Improvements in fibroblast proliferation.
Results

- Both the RxR and PPAR gamma gene code for nuclear regulatory factors and work together in modulating a number of other key genes involved in proliferation and inflammation
- NF-κB, TNFα and COX 2 are involved in the skin inflammatory process
- CD44 is involved in cell adhesion and is usually down regulated during differentiation
- AcquaSeal® Algae increased expression of both PPAR gamma and RxR, indicating that the use of AcquaSeal® Algae would likely result in increased epidermal proliferation

**Figure 4.** Expression of epidermal genes.
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Cellular Renewal

Cell Turnover Time

![Bar graph showing cell turnover time for old and young subjects with different treatments.]

Protocol

- A Dansyl Chloride assay was performed to determine the ability of AcquaSeal® Algae to modify the rate of skin turnover.
- One group of 8 subjects, average age 54 (Old Subjects) and one group of 10 subjects, average age 27 (Young Subjects).
- Treatment was applied to the volar forearm of all subjects.
- AcquaSeal® Algae reduced turnover time in both age groups, indicating that the product is capable of increasing cellular renewal.

Figure 5. Average number of days for cellular turnover.
Protocol

- A single use fifteen subject study evaluated the immediate impact of AcquaSeal® Algae on skin properties
- AcquaSeal® Algae was formulated into a lotion base at 2.0% and applied to the one side of the face, while the control lotion was applied to the other side
- A number of skin parameters were assessed after one hour
- AcquaSeal® Algae significantly improved skin hydration, reduced skin friction and provided a positive skin feel

**Figure 6.** Relative change in skin properties after one hour.

**Relative Change in Skin Properties**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Placebo - 1hr</th>
<th>Experimental - 1 hr</th>
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<tbody>
<tr>
<td>Hydration</td>
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<td>40</td>
</tr>
<tr>
<td>Friction</td>
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</tr>
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<td>20</td>
</tr>
<tr>
<td>Skin Feel</td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>
Protocol

- Fifteen subjects evaluated the effects of AcquaSeal® Algae on skin properties after four weeks.
- AcquaSeal® Algae was formulated into a lotion base at 2.0% and applied to the one side of the face, while the control lotion was applied to the other side.
- Treatment was applied twice a day.
- Improvements in skin hydration, clarity, lines and wrinkles, firmness, flakiness and overall appearance were observed with continuing use of AcquaSeal® Algae.

**Figure 7.** Relative change in skin properties after four weeks.
Protocol

- Balsam of Peru was used to induce skin irritation on the volar forearm and redness was evaluated with Minolta Chroma Meter.
- Immediately prior to application, 2.0% AcquaSeal® Algae in a base lotion or the base lotion alone was applied to the treatment site.
- 2.0% Balsam of Peru in squalene was applied for 30 minutes for one application (1x) and then twice a day for one week (1 week).
- 2.0% AcquaSeal® Algae in base lotion (before induction of irritation) lessened the increase in skin redness.

**Figure 8.** Average skin redness before and after Balsam of Peru application.
AcquaSeal® Algae

Product Recap

• **AcquaSeal® Algae** is a unique, oil soluble algae derived product designed to promote youthful skin, through several different mechanisms.

• Capable of providing **cellular renewal**, **cellular hydration**, **cellular proliferation**, and **anti-inflammation** benefits to defend against aging skin, **AcquaSeal® Algae** can be used in a wide variety of cosmetic and personal care applications.
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THANK YOU
For more information –Visit our website!
www.activeconceptsllc.com