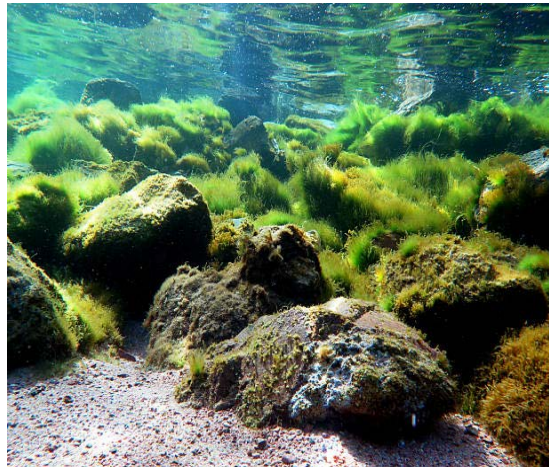


# AcquaSeal<sup>®</sup> Algae

Defends Against Aging Skin + Cellular Hydration + Anti-Inflammation



Tomorrow's Vision... *Today!*<sup>®</sup>

# 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

# AcquaSeal® Algae

## Commitment to Sustainability



- 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

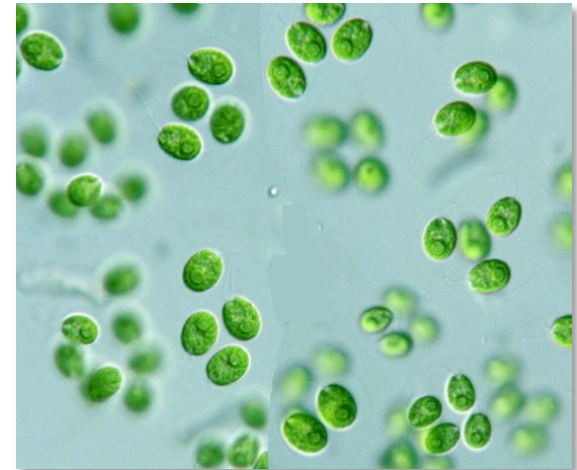


# AcquaSeal® Algae



## Green Algae

- 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



# AcquaSeal® Algae

## Defense Against Skin Aging



- 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

### Water Holding Capacity

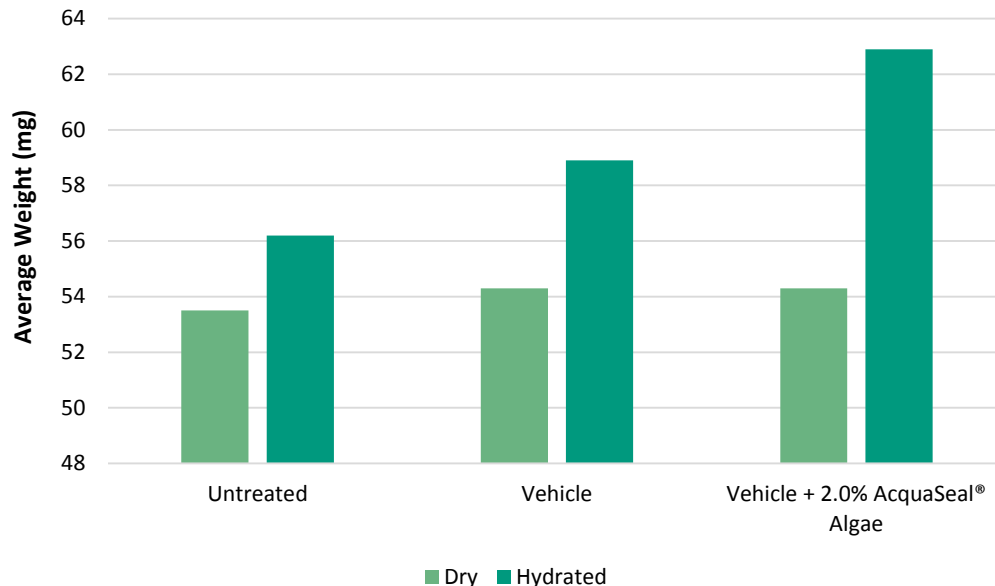


Figure 1. Average weight of skin cells for water holding capacity.

### 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

# AcquaSeal® Algae

## Cellular Hydration

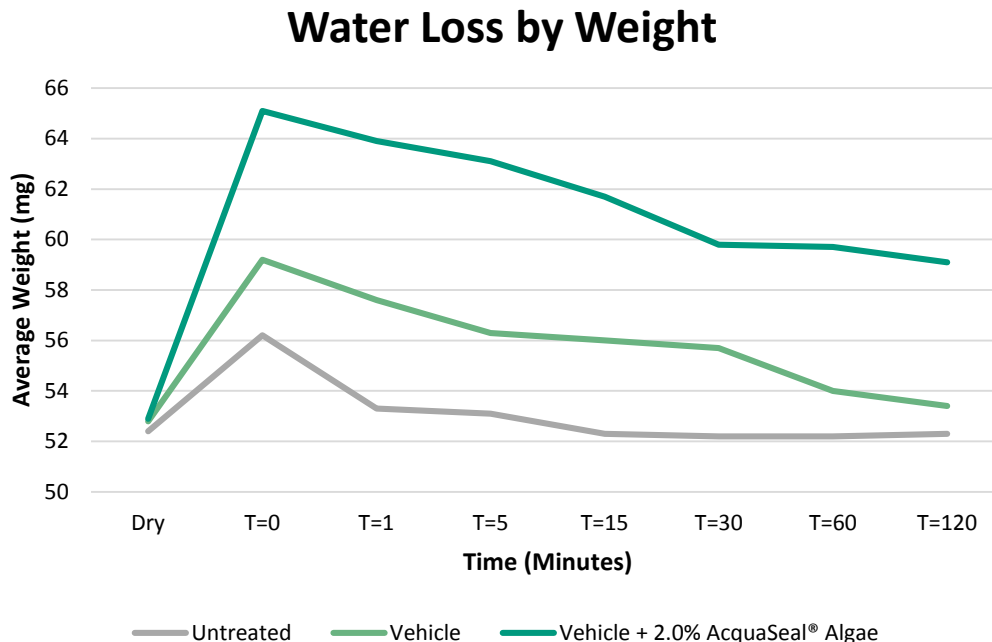


Figure 2. Average weight of skin cells for cellular water loss.

### Protocol

- 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



# AcquaSeal® Algae

## Cellular Proliferation

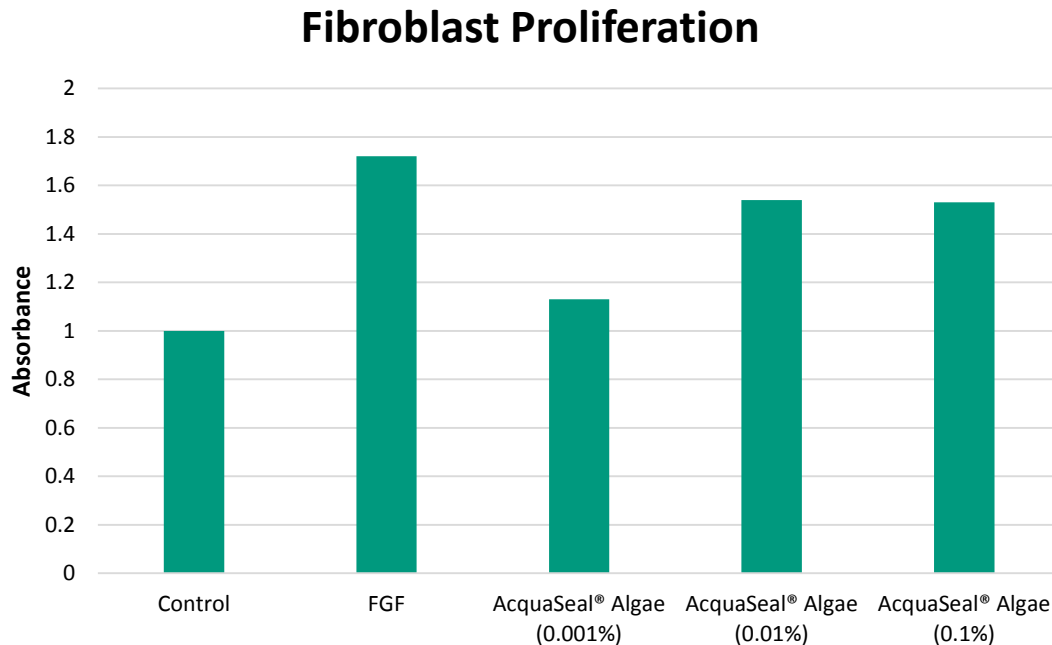


Figure 3. Improvements in fibroblast proliferation.

### 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

# AcquaSeal® Algae

## Skin Genomics

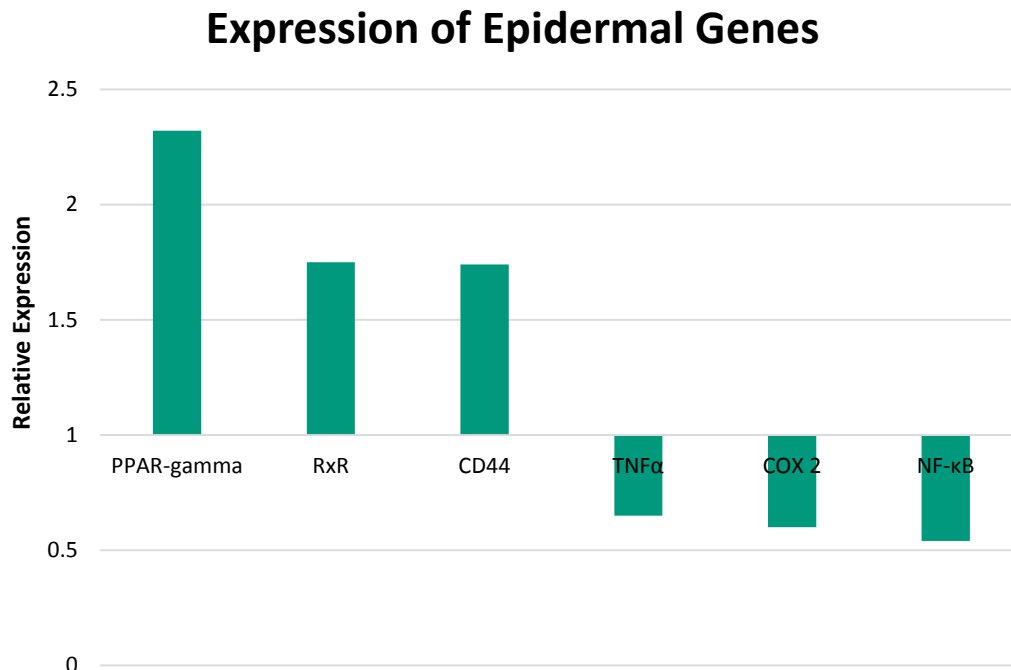


Figure 4. Expression of epidermal genes.

### 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- $\kappa$ B, TNF $\alpha$  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

# AcquaSeal® Algae

## Cellular Renewal

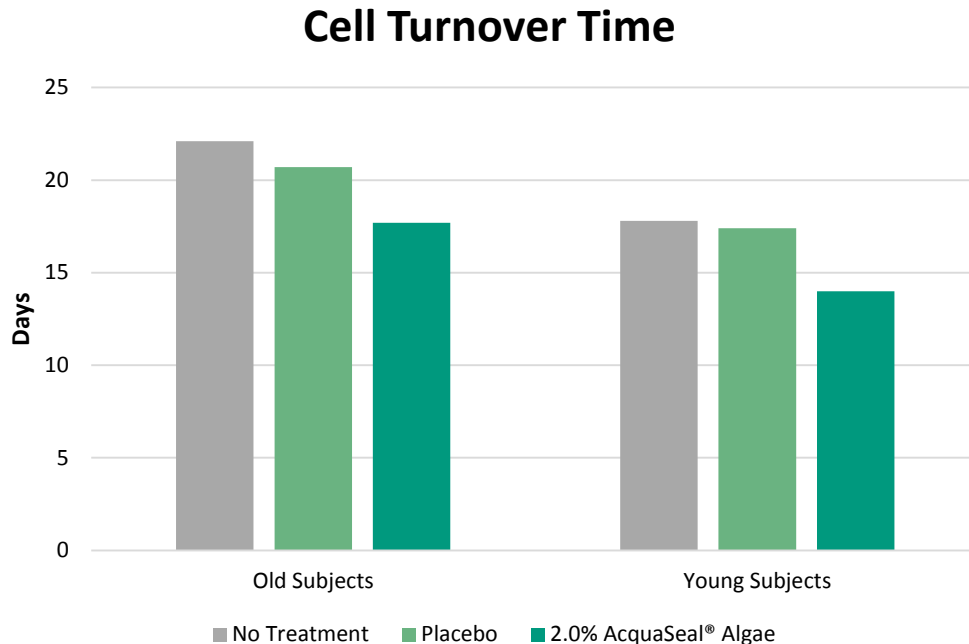


Figure 5. Average number of days for cellular turnover.

### 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

# AcquaSeal<sup>®</sup> Algae

## Immediate Use Benefits

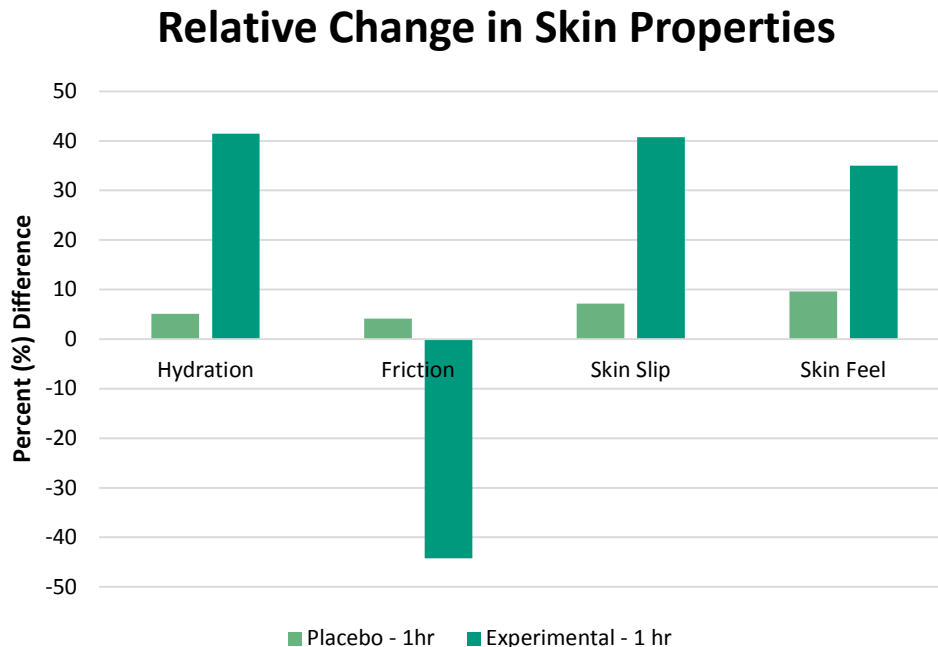


Figure 6. Relative change in skin properties after one hour.

### Protocol

- A single use fifteen subject study evaluated the immediate impact of **AcquaSeal<sup>®</sup> Algae** on skin properties
- **AcquaSeal<sup>®</sup> 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<sup>®</sup> Algae** significantly improved skin hydration, reduced skin friction and provided a positive skin feel

# AcquaSeal® Algae

## Long Term Use Benefits

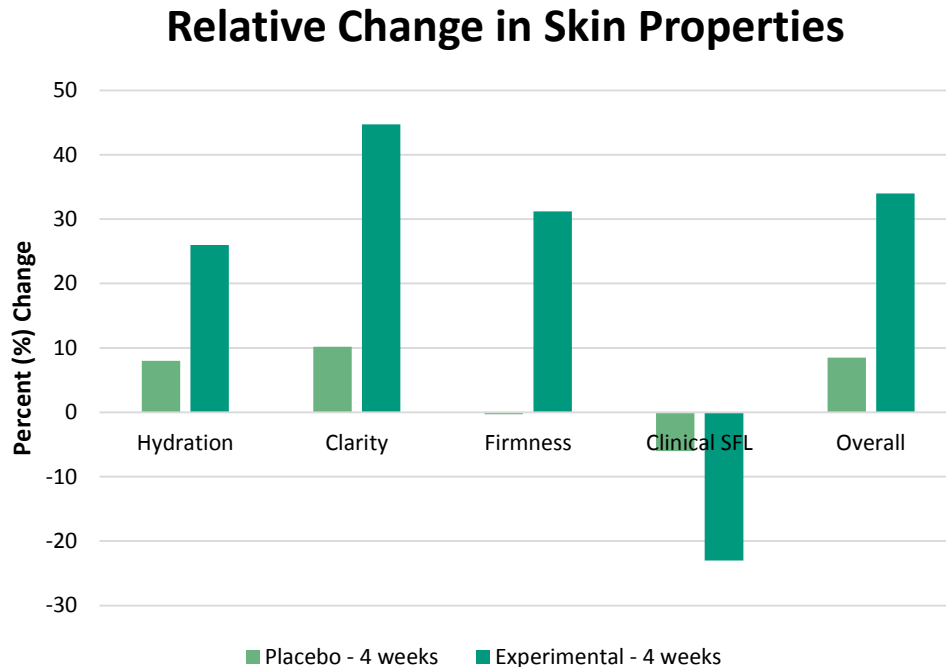


Figure 7. Relative change in skin properties after four weeks.

### 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**

# AcquaSeal® Algae

## In-vivo Reduction of Irritation

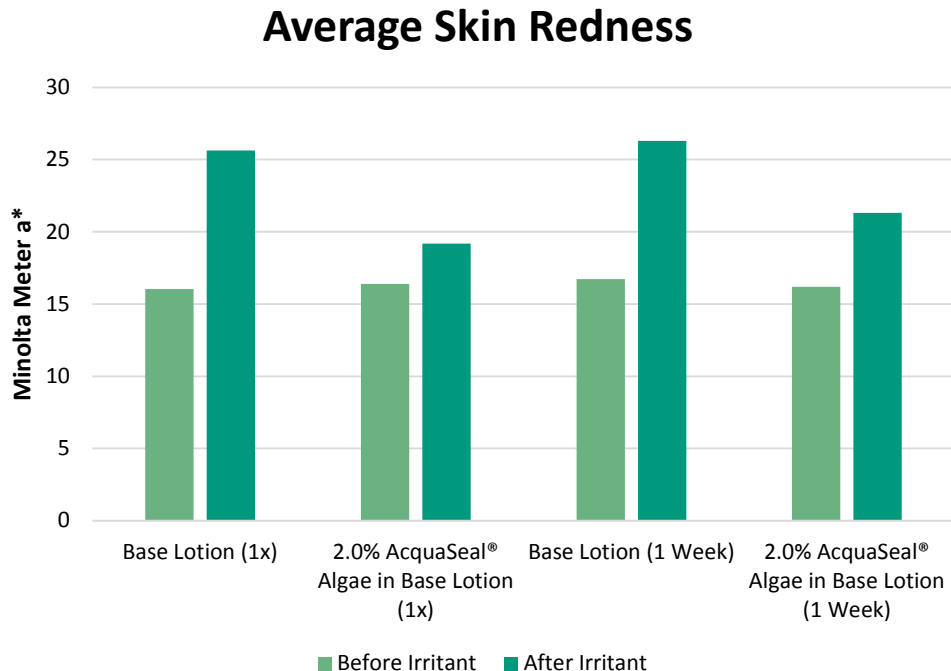


Figure 8. Average skin redness before and after Balsam of Peru application.

### 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

# 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!

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