ACB Wakame Bioferment Advanced

Anti-Aging, Antioxidant

Tomorrow’s Vision... Today!®
**20024 – ACB Wakame Bioferment Advanced**

**Product Code:** 20024

**INCI Name:** Undaria Pinnatifida Cell Culture Extract

**INCI Status:** Conforms

**Suggested Use Level:** 0.5 - 2.0%

**Suggested Applications:** Anti-Aging, Antioxidant
Anti-Aging: The next step in actives

Live Yeast Cell Derivatives (LYCD) used for wound healing & increasing ATP production

• Based on the works of George Sperti
• 1939 – Realized Cell fractions stimulate metabolic activity & stimulate cellular proliferation

Cell extracts can do more

Stop band-aiding the problem – Find a Solution!
Anti-Aging: The current view

Intrinsic ROS are more of a threat than extrinsic.

Mitochondria are like engines that produce ROS as a byproduct of oxidative phosphorylation.

Damage builds up over time.

Topical antioxidant address extrinsic ROS
- Band-Aid the Solution
**Oxidative Phosphorylation**

Is a metabolic process that fuels the production of Adenosine Triphosphate (ATP)
- ATP is the major source of energy in our cells

Is an electron transport system
- Transfer of electrons from donors to receptors (oxygen)
- Redox reactions are carried out by 5 mitochondrial protein complexes (Electron Transport Chain)
- As electrons pass through the chain, energy is generated that is used to make ATP

**The bowling ball analogy**

Oxidative Phosphorylation is like a bowling ball rolling down stairs – generates energy every time it hits a step.
Mitochondrial Aging

During oxidative phosphorylation, oxygen (final electron receptor) is reduced to water.

Leakages occur in the system
- Generate hydroxyl & superoxide radicals instead of water
- Cause damage to the mitochondria & mitochondrial DNA (mtDNA)

As cells divide, damaged mtDNA from old cells pass on to new cells
- Damage to mtDNA accelerates the pace of aging

- The conservation of mtDNA is so strict that genealogists use it to trace lineages
- mtDNA was used to trace human species back to the Mitochondrial eve (140,000 years ago)
Mitochondrial Aging: A vicious cycle

**How to break the cycle**

- The use of topical antioxidants doesn’t counteract mitochondrial ROS
- The solution is to address the source – our mitochondria

- Oxidative damage inhibits mitochondrial function
- Increase in the production of ROS
- Mitochondria ceases to generate sufficient levels of energy
- Cellular functions are decreased = Aging
- Mitochondrial aging

The cycle:
- Oxidative damage inhibits mitochondrial function → Increase in the production of ROS → Mitochondria ceases to generate sufficient levels of energy → Cellular functions are decreased = Aging → Oxidative damage inhibits mitochondrial function
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Cultured Wakame Cells

- Exposed to UV stress

- Extraction of synergistically active components (Heat Shock Proteins or Heat Shock Elements) – HSP’s

The Solution to Cellular Longevity!
Traditionally live cell derivatives are produced by exposing cells to an environmental stress – UV irradiation

- Our method – supplementing the growth mead used to culture wakame cells

- Allows us to produce a unique cell derivative that is capable of optimizing electron transport to reduce mitochondrial leakage (oxidative phosphorylation)

- This leakage results in the release of damaging free radicals & ROS that ultimately contribute to mitochondrial damage & aging
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**Target Aging**

- Stop intrinsic damage by enhancing oxidative phosphorylation
- Replenish structural proteins
  - Cell extracts have been shown to stimulate structural proteins & wound healing
- Increases oxygen Uptake
- Powerful Antioxidant
- Increases Collagen Synthesis
Efficacy Data: \textit{in-vitro}

15 Minute Oxygen Consumption Assay

**Protocol**

- Performed to assess the ability of ACB Wakame Bioferment Advanced to increase cellular oxygen consumption.

- Results indicate that ACB Wakame Bioferment Advanced is capable of inducing changes in oxygen consumption to fibroblasts.

- Compared to the untreated control, ACB Wakame Bioferment Advanced increased oxygen consumption by 26.8%.

Figure 1: Results of the oxygen consumption assay.
Efficacy Data: *in-vitro*

**DNA MicroArray**

**Up regulated genes:**

a) Structural proteins: Collagen, fibronectin, keratin

b) Oxidative phosphorylation

c) Mitochondrial genes

**Down regulated genes:**

a) Inflammation

b) ROS

c) NO

*2,000 genes up-regulated*

*5,000 genes down-regulated*
Efficacy Data: *in-vitro*

24 Hour Oxygen Consumption Assay

**Protocol**

- Performed to assess the ability of ACB Wakame Bioferment Advanced to increase cellular oxygen consumption after 24 hours of treatment.

- Results indicate that ACB Wakame Bioferment Advanced is capable of inducing changes in oxygen consumption to fibroblasts.

- Compared to the untreated control, ACB Wakame Bioferment Advanced increased oxygen consumption by 26.8%.

*Figure 1:* Results of the oxygen consumption assay.
Efficacy Data: in-vitro

ROS Formation Assay

Protocol

• Performed to assess the impact that **ACB Wakame Bioferment Advanced** has on intracellular ROS formation

• Results indicate that **ACB Wakame Bioferment Advanced** is capable of reducing ROS formation compared to the untreated control

**Figure 2:** ROS Formation Results.
Efficacy Data: *in-vitro*

**ORAC Assay**

**Figure 3:** Antioxidant capacity of test materials compared to Trolox.

**Protocol**
- Trolox® was used as the positive control.
- **Test Quantity:** 0.05% & 0.1%
- Fluorescent measurements were taken every two minutes for two hours.
- **ACB Wakame Bioferment Advanced** showed antioxidant activity at levels as low as 0.05% concentration.
Efficacy Data: *in-vitro*

**NO Formation**

**Protocol**
- Performed to assess the impact that ACB Wakame Bioferment Advanced has on intracellular NO (nitric oxide) formation.
- ACB Wakame Bioferment Advanced was able to reduce NO formation.

**Figure 4**: NO Formation results shown in relative fluorescent units (RFU).
Efficacy Data: *in-vitro*

**Procollagen Assay**

![Graph showing comparison of procollagen levels following treatment]

**Protocol**

- An ELISA assay was used to assess **ACB Wakame Bioferment Advanced** impact on collagen synthesis.

- The results indicate that **ACB Wakame Bioferment Advanced** is capable of increasing the expression of type 1-C Peptide in a fibroblast cell culture model.

- Useful in cosmetic formulations intended to increase collagen synthesis

**Figure 5:** Comparison of the effects on procollagen levels following treatment.
Efficacy Data: *in-vitro*

**Collagen Synthesis**

**Figure 6:** Comparison for percent increase in collagen I synthesis.

**Protocol**

- An ELISA assay was done to determine if **ACB Wakame Bioferment Advanced** is capable of inducing collagen I synthesis.

- Three concentrations were compared to a positive and negative control.

- The findings indicate that **ACB Wakame Bioferment Advanced** is capable of increasing collagen I synthesis in a dose dependent fashion.
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ACTIVE CONCEPTS LLC

THANK YOU