ACB Wakame Bioferment Advanced

BACKGROUND & SCIENCE
Mitochondria are understood to be the cause of aging! This theory of aging suggests that pollutants formed as a by-product of oxidative metabolism cause the damage that leads to aging. Yet the majority of anti-aging ingredients don’t address this issue. Instead these products provide band-aid solutions by using antioxidants to limit extrinsic oxidative damage or film formers to tighten the skin thus masking signs of previous damage. This needs to change, due to the concentration and proximity of mitochondrial pollutants to DNA, they are more of a threat than the external pollutants.

In the simplest terms, our mitochondria produce energy by moving protons across the mitochondrial inner membrane through a series of chemical reactions. They in essence function like engines that use fuel to generate energy. Like all engines, in addition to generating energy, they also generate unwanted pollution!

Oxygen is involved in the electron transport and acts as the final electron acceptor. Research has shown that there are electron “leaks” that occur within the mitochondrial inner membrane that reduces mitochondrial efficiency. The leakages limit ATP synthesis, while damaging the mitochondria and the surrounding cellular environment. The leaks also leave cells more susceptible to destructive reactive oxygen species that were not coupled with protons at the end of the electron transport cycle. The combination of the mitochondrial leaks and the decrease in ATP synthesis not only limits efficiency, but also acts as pollutants that severely compromise the health and longevity of our cells. This is now understood to be the primary factor responsible for aging.

BENEFITS
Much work has been done to show that live cell derivatives can be used to increase oxygen consumption to stimulate cellular respiration, proliferation and wound healing. However researchers failed to address the issue of mitochondrial leakage that is directly related to aging and cellular longevity. One of the largest growing areas of anti-aging research today involves this concept of mitochondrial anti-aging.

- Increase cell metabolism
- Decrease internal ROS
- Increase collagen synthesis
**ACB Wakame Bioferment Advanced**

**Efficacy Data**

Traditionally live cell derivatives are produced by exposing cells to an environmental stress such as UV irradiation as referenced in the original patents by George Sperti. We have refined this method by also supplementing the growth media used to culture wakame cells. These adaptations have allowed us to produce a unique cell derivative that is capable of optimizing electron transport to reduce mitochondrial leakage. This leakage results in the release of damaging free radicals and ROS that ultimately contribute to mitochondrial damage and aging.

Our findings illustrate that **ACB Wakame Bioferment Advanced** increases oxygen consumption, while simultaneously reducing the formation of reactive oxygen species to increase overall mitochondrial efficiency. A DNA microarray on cultured human fibroblasts confirms that **ACB Wakame Bioferment Advanced** is capable of enhancing oxidative phosphorylation while limiting mitochondrial stress. The results also suggest that the product simultaneously increases the expression of collagen genes in situ, which was confirmed by a separate in vitro collagen assay.

**ACB Wakame Bioferment Advanced** is a unique active derived from cultured wakame cells. Wakame is a species of seaweed (Undaria pinnatifida) that is considered to be a potent ingredient for purifying and fortifying the body in many Asian cultures. Our research suggests that **ACB Wakame Bioferment Advanced** can deliver potent anti-aging effects to minimize damage at the cellular level where aging starts.

![Figure 1. Illustration of electron transport in mitochondria.](image)

**References:**

