

# Ecklonia Cava

**Related algae:** *Ecklonia maxima* (Sea Bamboo)

**Common name:** Kajime (Japan), Kamtae (Korea),

**Family:** Phaeophyta.



## ***Description***

This brownish-green algae is prevalent along the coasts of Japan and the southern coast of Korea (Cheju-do Island). These laminariales form huge kelp forest in the subtidal pools. The plant resembles *Laminaria digitata* but it has a serrated blade that can grow up to 1.5-2 meters in length. Their holdfasts grip tightly around the rocks where other smaller algae anchor themselves for support in a symbiotic relationship. The harvest is mostly used for the food industries of Japan and Korea.

A related algae is *Ecklonia maxima* which resides in the southern hemisphere off the coasts of south Africa and South America. Popularly known as Sea Bamboo, these marine plants are harvested by fishermen in Angola for export to Europe. This is a mineral rich seaweed nourished by the cold Antarctic “Benguela” current.

## **History**

The use of *Ecklonia* as a food dates back hundreds of years in Asia. In Wajima City in Japan, dried kajime as it is known there is abundant in the seafood markets. Powdered Kajime is used as a food additive to give a brown tint to mannan—a traditional food in Japan and Korea.

## **Nutritional value**

*Ecklonia cava* is rich in minerals, trace elements, iodine and especially mucopolysaccharides. As a dietary supplement, it is recommended for its purifying and protective properties. Its powerful anti-oxidant properties protect cellular DNA from free radical damage while its polysaccharides chelate harmful metals and radioactive wastes that accumulated in the intestines. Among the principal active nutrients found in *Ecklonia cava* are:<sup>18</sup>

- Laminaran, a complex sugar with laxative and diuretic properties.
- PolyPhloroglucinols (PPCs), a phlorotannin, is a free radical scavenger with strong anti-oxidant properties as well as protection against UV-B radiation and microbial infections.
- Minerals and trace elements account for 30% of the dry weight of *Ecklonia cava* which is five times greater than most vegetables. As it originates from the ocean, consumers are assured of total compatibility with the human body.

- Fucoidan and Laminaran are complex polysaccharides known for their ability to inhibit tumors and lowering of serum cholesterol through its ability to block absorption of acids; anti-inflammatory and anti-thrombotic properties. (Thrombosis Research, 99, 623-634, 2000).
- Fucoxanthins are brown accessory pigment found in all brown algae that are among the most powerful anti-oxidants found in marine algae.
- Glutathione has been called the "master antioxidant" and regulates the other antioxidants such as vitamin C and vitamin E within the body. It is the regulator and regenerator of immune cells and a valuable detoxifying agent in the human body.

### **Spa therapeutic uses**

**Skin care.** *Ecklonia cava* has been shown to be an effective ingredient in anti-aging serums such as those from BioSea [Corporation, an emerging leader in the nutraceutical field]. Through modern bio-tech extraction processes, concentrated derivatives, concentrates of this brown algae provide protection against free radicals and improve circulation to the dermis.

**Body care.** No known applications [of *Ecklonia cava*] to date in North America. However, *Ecklonia maxima* harvested from the waters off the coast of Angola is being used for body wraps and hydrotherapy baths. Results obtained are similar to those obtained from use of *Laminaria* and *Fucus* algae.



(*Ecklonia maxima* is nourished by the cold Antarctic “Benguela” current creating a lush kelp forest.)

***Hair and scalp.*** *Fucus vesiculosus* provides natural emollient properties for dry and damaged hair. Applied to the scalp, it improves circulation and reduces itching.

## **Medicinal uses**

### **Clinical Study of Edicos - Natural Antioxidants Obtained From Seaweed**

#### **The Main Ingredient: Polyphenol Complex (PPC)**

Edicos is a natural anti-aging nutraceutical derived from particular class of seaweed and B vitamins. The main ingredient of Edicos is a polyphenolic complex. Polyphenols are known as one of the world's most potent antioxidants. They work as [hunters] throughout the body neutralizing free radicals. Free radicals are known to cause cellular damage. Furthermore, polyphenols act as chelators of metal cations (i.e. iron, zinc, and copper). Excessive build up of these reactive metals can promote the generation of free radicals and lead to the damage of the cell membrane and cellular DNA.

Numerous studies have shown the benefits of increasing polyphenols intake. Not only do they act as powerful antioxidants, but they can also protect and strengthen blood vessels by decreasing LDL cholesterol. High levels of LDL cholesterol can lead to atherosclerosis. Polyphenols can also act as natural anticoagulants by decreasing the action of plasmin, a key component in blood clotting. Thinning of the blood improves the circulatory system and allows nutrients to be delivered to all the vital parts of the body.

Decreased levels of LDL cholesterol and anticoagulant properties of polyphenols offer protection from heart disease and hypertension. Polyphenols have also been implicated in having anticancer properties. Free radicals may react with DNA to cause damage which can lead to mutations in the DNA. Mutated DNA is one of the initializing events in the formation of certain cancers. Polyphenols have a natural anti-inflammatory property as well. They can block cyclooxygenase, a key enzyme in the inflammatory cascade.

Although polyphenolic complexes are abundant in nature, they are not always absorbable by humans. The research and development team of Edicos have found a way to deliver an absorbable, potent, and powerful polyphenolic complex in a safe and natural way. It took ten years of research and development to extract and make it thermally stable. Making a polyphenolic compound thermally stable allows humans to digest and absorb 100% of the product. This extraction process earned a United States patent. No side effects have even been seen with Edicos.

Steven Stein, MD  
Department of Medicine  
University of Washington

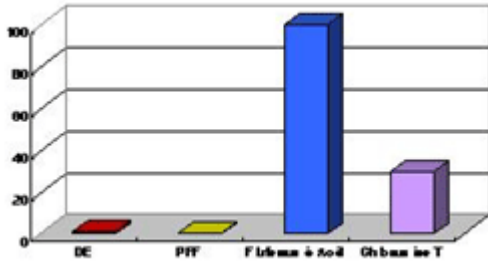
## **Summary of Test Results - Enhancement of Blood Circulation**

### **How Edicos Works?**

Edicos works by improving blood circulation. Because increased blood viscosity can block the intake of nutrition through capillary vessels, normalizing viscosity for good peripheral blood circulation, maximizing intake of nutrition, leading to healthy skin. The PPC works to activate plasmin, which is responsible for the control of blood coagulation. Edicos also works to purify, detoxify, and return the system to natural levels, by gradually eliminating the source of blood contamination such as excessive lipid and/or high sugar levels.

### **Activation of Fibrinolytic System**

PPC molecules in Edicos can strongly counterbalance the excessive blood-clotting tendency by inhibiting antiplasmin, which quickly and strongly neutralizes the action of plasmin.



Anti-Plasmin Inhibition Activity

### Free Radical Scavenging Activities

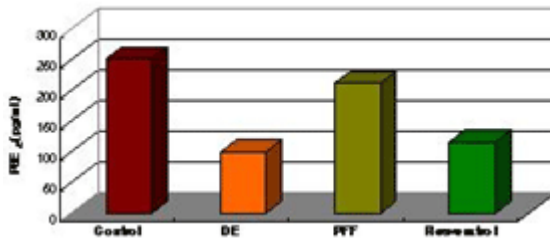
Most of PPC molecules have 5 ~ 10 times greater free-radical scavenging activity than synthetic antioxidant such as BHT, and ~ 2 times greater activity than Tocopherol in DPPH assay.

### Antioxidative Protection of LDL

Protecting blood vessels from being damaged by oxidized LDL, which after being captured by macrophages, will damage endothelial cells and deposit cholesterol into the vessel wall.

### Anti-inflammation Activity (Inhibition of PGE2)

PGE2 is related to inflammation. PPC molecules in Edicos have a strong PGE2 inhibition activity.



Anti-Inflammation Activity

### Agricultural Applications

Ecklonia maxima algae, along with Ascophyllum are used extensively in agriculture as fertilizers. These brown algae contain plant-like (phyto) hormones including auxins, gibberellins and cytokinens stimulate plant growth. Marine polysaccharides such as alginic acid condition the soil and counteract the effects of acid rain, and the abundance of trace elements and minerals restore vital nutrients for healthy plant growth.

1. Clinical Report by Laboratoire DermScan, Lyons, France ("Evaluation, In Vivo, on Human Subjects, of the Anti-Wrinkle Effect of One Cosmetic Product Using Skin Image Analysis")
2. Clinical Report by Laboratoire DermScan, Lyons, France ("Evaluation, In Vivo, On Human Subjects, of the Depigmenting Effect of a Cosmetic Product")



Photography by William Boyle

[www.algaebase.org](http://www.algaebase.org)

