

Life force in an abundant sea.

My Encounter with Mitochon Water

Dioxidizing water containing fucoidan

This is a report of my own experience drinking Mitochon Water for a week.

From the second day, it was much easier for me to wake up. Also, I did not easily get tired that day. Mitochon Water is suitable for people living today, because it allows us to take minerals while rehydrating. Mitochon Water is made by using this mineral rich crystalloid fucoidan.

The fucoidan used in Mitochon Water is made in Kingdom of Tonga, the paradise of South Pacific Ocean. The ocean surrounding this country is the second deepest in the world, and the stream from the deep sea is pure. Fucoidan of Mitochon Water is extracted from the mozuku harbored by the coral reefs of Tonga. The amount of fucoidan contained in Tonga's mozuku is the highest among all—namely, twice or three times more than mozuku in Okinawa. Only 5 grams of fucoidan can be extracted per 1 kilogram of algae.

The main component of fucoidan is called fucose, a polysaccharide found in algae. The element of the viscous water-soluble dietary fiber is a sulfate group compounded with polysaccharides, which contains a lot of amino acids. Its effectiveness is discovered by scientists all around the world. The abundant minerals contained in the ocean of Tonga make the fucose's molecular weight even greater. The average molecular weight of the extract is approximately 500,000.

Fucoidan was found in the fossils attached to algae during an archaeological prospection (Biology and Technology of Economic Seaweeds). In 1913, Kylin of Uppsala University found that people living near the shore of Sweden were healthier than people in other areas. He noticed that the skin of those people's hands were especially beautiful. Through further investigation, he discovered fucoidan. Back then, the main focus of the research was associated with the physical characteristics of fucoidan. But later, fucoidan's research was conducted all around the world as below:

In 1957, Springer found anticoagulant in fucoidan.
In the 1970s, research of the anti-cancer activity of fucoidan starts.
In 1988, Baba presents an article of the antiviral activity of sulfated polysaccharides including fucoidan.
In 1995, Hirno from University of Sweden presented an article about the effect of sulfated polysaccharides, which inhibits growth of *Helicobacter pylori*, the main cause of stomach ulcer and cancer.
In 1996, Japanese Cancer Association announced that fucoidan has apoptosis effect towards cancer cells.
In 2002, French scientists found that fucoidan has anticancer activity and restrains cells' hyperplasia.
In 2005, Kizaki's group from Keio University found that apoptosis of tumor cells are caused by fucoidan.

Likewise, so far over 100 years, many research on fucoidan took place all around the world. Recently, it is revealed that fucoidan helps activate NKC and macrophages, cells with immune systems. Also, the sulfated group in fucoidan removes *Helicobacter pylori* from our body. Fucoidan not only maintains our immune system, but it is approved to restrain overproduction of allergy reaction.

Such history of valuable research about fucoidan has been passed over to present and to the future. I am very much excited to seeing the coming research significant for our wellbeing.

University of California
Principal Investigator at Osaka University **Yoshiji Ayuzawa**
Doctor of Medicine

Fucoidan is a viscous component,
which helps you live healthily and energetically.
It is extracted from natural mozuku grown in a beautiful ocean of
Kingdom of Tonga where coral reefs lie.

The Vitality of the Fertile Ocean

FP Fucoidan Series

What is fucoidan contained in Mitochon Water?

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F u c i o i d a n , t h e b l e s s i n g s o f t h e o c e a n w i t h g r e a t p o t e n t i a l s .

fucoidan

Naturally-derived viscous component

Fucoidan

The mozuku used for Mitochon Water grows vigorously in a severe environment. The blessing of the nature, fucoidan helps you deal with problems, and leads you to a healthier and more energetic life.

Fucoidan is a sulfated polysaccharide, which is part of the viscous component found on the surface of algae. In other words, it is a dietary fiber. Fucoidan serves as a barrier of algae to protect themselves from external factors such as tides, drying, sand, bacteria, and UV. Additionally, it has a function to recover tissue damages and normalize the condition.

-Fucoidan induces apoptosis tumor cells-

Recently, it is revealed that fucoidan^(*), typically found in algae, induces apoptosis of tumor cells. This barrierlike function and self-healing power protect our body and strengthen our immune system.

(*) A cooperative research in anti-obesity, anti-diabetes, anticancer, antioxidant, and cellular activation with Tottori Institute of Industrial Technology.

The Three Major Effect of Fucoidan

Reinforces Immune Strengths

Fucoidan strengthens our immune system by recovering our self-healing power and improving our constitution. One of the immune cells, NKC becomes activated by taking fucoidan. Additionally, when fucoidan passes through the small intestine, it stimulates the Peyer patch and reinforces our immune strength.

Regulates and Develops Stronger Stomach and Intestines

Fucoidan also has a role to protect our mucous membranes. The sulfate group in fucoidan stimulates and activates our stomach. It also decreases Helicobacter pylori, a cause of gastric ulcer and other diseases. The sulfate group in fucoidan serves as a shield in place of gastric mucosa, adsorbs Helicobacter pylori, and carry them away to the intestines.

Antioxidative effect

Algae protects themselves with the viscous component on their surface. It keeps bacteria away and prevents oxidation caused by UV. Active oxygen promotes aging of the internal parts of our body. The antioxidative effect of fucoidan prevents our body from rusting.

The Experiment of Antioxidation

Immersing iron clips in tap water and Mitochon Water

[After 70 days of experiment]

Tap Water

Mitochon Water



Rust occurs



Rust prevented

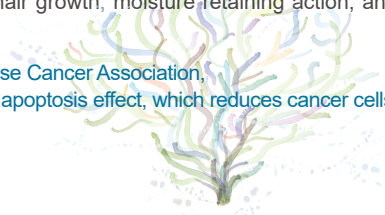
and more...

Other Effects of Fucoidan

The immune system we possess protects us from bacteria and viruses, however, at the same time, it may cause allergic reaction. When a foreign substance invades our body, antibodies which match the substance are created. Of those antibodies, one that is related to allergic reaction is called IgE. Fucoidan is known to have an antiallergic effect which regulates the immune system and prevents overproduction of IgE, and in recently, it is revealed that it also induces the production of HGF (hepatocyte growth factor). HGF not only recovers hepatocyte, but recovers tissues of other organs and epidermic cells. It is known that recovering damaged hepatocyte improves liver function and has other positive effects such as antitumour, antimetastatic action, antibacterial/antiviral action, anticoagulant action, hypocholesterolemic activity, inhibits blood pressure and blood sugar elevation, hair growth, moisture retaining action, and weight control.

Also, In 1996, at the 55th annual meeting of the Japanese Cancer Association, it is announced that fucoidan is the only substance with apoptosis effect, which reduces cancer cells.

Effectiveness of Fucoidan



Why Fucoidan from Kingdom of Tonga is Superior

The composition of fucoidan is affected by the type of algae, its habitat, and the extracting method. The effectiveness of the viscous component, fucoidan, is determined by its molecular weight and its content of sulfate group^(*). Our fucoidan is made of rare mozuku from Kingdom of Tonga, which contains sulfate group over 13%. Kingdom of Tongan mozuku is a rare species grown in mineral rich South Pacific Ocean. The mozuku grow in a beautiful ocean among coral reefs, where less water pollution exists. At the same time, they produce fucoidan to protect themselves from UV and intense tides. The amount of fucoidan found in Tongan mozuku is about twice to three times as great as in mozuku found near Japan. The mozuku, which is naturally grown in Tonga, is a rare species which can only grow in the area, therefore, there is a high possibility that it is taxonomically a new species. Harvested mozuku is cleaned and brought to Japan, and derived under the proprietary technology in our factory. During the process, arsenic and iodine is removed to produce safer products.

(*)Sulfate group = The reason why gastric mucous has viscosity is because of sulfate group.

Comparing the Effect

It appears that Fucoidan used in our company's product, is superior than others in many aspects. The fucoidan grown in Tonga's ocean provides us with new possibilities.

The amount of sulfate group and fucose derived from each dried mozuku	Type of Mozuku	Sulfate Group (%)	Fucose (%)
	MH's O mozuku	9.2	5.3
	HG's O mozuku	4.6	17.6
	Tongan mozuku	18.3	52.9

What's Different?

Molecular Weight

Not only the composition of sugar and sulfate group, but its molecular weight creates a decisive difference.

Ingredients	M. Weight
Tongan Mozuku	avg. 500,000
Okinawan M.	280,000
Gagome-Konbu	200,000

What's Different?

Viscosity

Fucoidan from Kingdom of Tonga contains high viscosity.

Ingredients	Viscosity *1% Lig.
Tongan Mozuku	800mPa·s
Okinawan M.	7.5mPa·s
Gagome-Konbu	10mPa·s

About Tongan Fucoidan

Q & A of Fucoidan

Q1 What is Fucoidan?

Fucoidan is a viscous component found on the surface of algae such as mozuku, sea cabbage, and seaweed, and sea cucumber. It is only found in the jellylike substance of frogspawn onshore.

Q2 Are there differences between the types of Fucoidan?

There are not many differences between the types of fucoidan extracted from mozuku, seaweed, or sea cabbage. However, it is important not to exclude sulfate group which makes up 13~20% of the extract. According to our study, we consider that fucoidan which contains sulfate group less than 13% will not function effectively.

Q3 Does eating Mozuku have the same effect?

Yes, eating mozuku provides the same effect. However, if you wish to take fucoidan for your health and to prevent or cure diseases, you need to eat a large amount of mozuku. In general, you can only get 4 grams of fucoidan from 1 kilograms of mozuku. This may result in unbalanced diet or taking excessive salt. Also, even if we could eat that much, we don't possess an enzyme to decompose them. Thus most of the fucoidan will be excreted from our system.

Q5 I'm worried about taking too much iodine...

Thyroid hormone activates metabolism, mental activity, and growth. Iodine is the main ingredient of thyroid hormone and is a trace element necessary for our body. Lack of iodine results in hypothyroidism, which causes growth disease, general malaise, xerosis cutis, loss of hair, and edema, and one may become spiritless and sensitive to cold. In general, it is recommended to eat food which contains iodine. However, we only need about 0.1 milligrams a day. If a person keeps taking more than 3 milligrams of iodine a day, it is possible that s/he becomes thyroopathy. It is possible that Hashimoto's disease and Basedow disease become worse.

Although, fucoidan made from mozuku does not contain much iodine, you must be cautious because fucoidan extracted from mekabu and sea cabbage might contain plenty of iodine. For Mitochon Water, iodine is deliberately removed during the process of refining. Even if iodine is left in the product, it is about 300 micromilligrams or less, which is far less to be harmful. Even so, if you have any diseases listed above, it is recommended to consult your doctor before using the product.

Q4 What is apoptosis? Why is it used for cancer treatment?

Every cells in every living things has a switch, which annihilates itself. For example, a tad disappears from a tad pole when it turns into a frog. This system of cells' self-annihilation is called apoptosis. This system of programmed cell death is embedded in our genes. However, cancer cells are abnormal cells which this system does not function properly and lives on without dying. Therefore, if there is a way to induce the apoptosis of the cancer cells, it is possible to kill them. Recently, fucoidan is considered to be a candidate of anticancer agent.

We refine safe and high quality fucoidan.

Over 85% is guaranteed as fucoidan

Under 2ppm arsenic guaranteed

Over 45% fucose guaranteed

Under 10mmp heavy metal guaranteed

Over 13% sulfate group guaranteed



How to Take Tongan Fucoidan Effectively

How can we take Fucoidan effectively?

Mitochon Water is the solution!

Mitochon Water profusely contains high quality fucoidan extract.

FP series Mitochon Water contains 6000mg of fucoidan in 530ml!
We hope Mitochon Water helps your healthy life and aging care.



<CAUTION> Please shake well before consuming, and consume soon after opening.