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My Seaweed-Fucoidan Challenge Summed Up!

By Terrance Howell - Co-owner/co-founder of 7 Fathoms Seaweed Skincare Ltd.

Fucoidan is a compound found in select seaweeds like *Laminaria digitata*. *Laminaria digitata* is the crucial ingredient in our 7 Fathoms seaweed skincare products.

This superhero-like compound boasts an impressive lineup of health benefits. Scientists think it has elements that boost the immune system and fight inflammation. This natural powerhouse contains antioxidants and sugars, making it essential for health research.

Ever stumble upon a scientific marvel that's complex yet endlessly intriguing? That's precisely how I feel about fucoidan. It's an extraordinary compound found in seaweed that showcases many incredible properties. It is the subject of over a thousand studies!

Here are the results of my eight weeks! The potential health benefits of it are vast. It can support the immune system, reduce inflammation, and act as an antioxidant.

Week #1: What exactly is fucoidan, and where is it found?

Fucoidan is a bioactive compound in the cell walls of *Laminaria digitata* and other brown macroalgae tissue. (It is also found in invertebrates like sea urchins and cucumbers.)

To be more precise, it is a (polymeric) sugar, a long-chain sulphated polysaccharide. Fucoidan is genuinely an incredible, magic sugar made up of fucose units. Not to be confused with fructose, which is derived from land-based plants. These fucose polysaccharides can be very long but, more importantly, are highly sulphated.

The research shows a strong correlation between a higher degree of sulphated unit groups and anti-inflammatory benefits.

Week #2: Is fucoidan the same in all brown seaweeds?

So, we've talked about fucoidan and its presence in various types of brown seaweeds. But here's the thing—it's not identical in every seaweed. Each seaweed species carries its distinct version of fucoidan. How it's assembled and what it does can vary. This is influenced by the species, where it grows, the harvesting season, and its maturity.

This diversity means each seaweed has its unique 'blueprint' for fucoidan. So, fucoidan in one seaweed culture might have different traits. Each species has been found to

have unique structural characteristics and resulting bioactivity in fucoidan. These differences make each source's effects and applications potentially unique.

There has been a remarkable increase in scientific research on fucoidan over the last two decades. This is due to its various potent bioactive properties. Fucoidan has the potential to be an antioxidant, immune system modulator, anti-inflammatory and more. We will better understand fucoidan's therapeutic potential as more studies are done.

Week #3: Why is it important not to separate fucoidan and other bioactive compounds in brown seaweed?

So, we've talked about fucoidan and how each seaweed has its own unique 'blueprint' for fucoidan. Now, we want to jump to why we don't just extract the fucoidan and why we keep the suite of bioactive compounds together. Its long evolutionary history is crucial when working with a species like seaweed. It has endured extinctions and incredible climate changes.

We recognize and respect the importance of everything algae endured over a billion years of evolution to survive and succeed. That suite of bioactive compounds evolved and supported algae through incredible environmental stresses.

As a business, we recognize that seaweed's total value lies in considering all that R&D that nature did. So, we follow nature's R&D, take an integral approach, and respect that these bioactives work as a family. Our extraction approach is centered on preserving all bioactive compounds, not separating, or denaturing them. That's our goal.

Week #4: What elements form seaweed, and where does fucoidan fit?

Several elements, like carbohydrates, proteins, and lipids, make up seaweed.

Fucoidan is a complex carbohydrate, a specific type of polysaccharide. It is found in brown seaweeds. Fucoidan molecules can have different degrees of sulphation. Sulphation means having sulphate groups attached to the carbohydrate chain. The presence of sulphate groups alters the properties of fucoidan. It influences its biological activities, such as its anti-inflammatory effect.

Higher sulfation levels often correlate with increased biological activities. These activities include anti-inflammatory, anti-microbial, and antioxidant properties.

7 Fathoms is now working under a National Research Council project with the Marine Institute, Memorial University of Newfoundland. The goal is to analyze in 7 Fathoms seaweed extracts -- *Laminaria digitata* and *Fucus vesiculosus*:

- the amount of fucoidan,
- the degree of sulphation and
- the biological activity -- anti-inflammatory, antioxidant, and antibacterial.

Week #5: What are humectants, and what makes our Laminaria digitata seaweed extract, rich in fucoidan, great for drawing moisture into skin cells?

- Humectants are compounds found in nature that attract water molecules. They are an essential component of skincare.
- Humectants draw moisture from the lower dermis up to the surface of the epidermis, the outer layer of skin. They also remove moisture from the air around the outer layers of the epidermis.
- A good humectant draws moisture into the skin. It helps hold moisture and protect against elements, such as cold, dry winter air.

As you know, Fucoidan is a bioactive compound in our Laminaria digitata (brown seaweed) extract, which we use in our seaweed products. It is a wonderful humectant!

- Laminaria digitata (brown macro-algae) thrives at shallow depths, where it experiences exposure to the sun's UV rays.
- The fucoidan in the Laminaria digitata helps to repair and protect from the effects of these UV rays.
- The algae must protect itself, which gets passed on to you in our skin care products.

Algae's self-protection properties translate into a valuable humectant for skincare. Brown macro seaweed/algae is a perfect source of humectants. [Click here for Terrance to chat about humectants.](#)

Week #6: How does fucoidan help protect the collagen and elastin in our skin?

Well, I'm back on the fucoidan challenge train after a slight shift last week to humectants. Fucoidan is such an amazing bioactive that we continue to learn about.

This week, I wanted to tell you how fucoidan can help protect the collagen and elastin in our skin.

- Collagen is the most abundant protein in the body, and it is responsible for the structure and strength of the skin.
- Elastin functions differently. Its fibres allow the skin cells to stretch and then bounce back.
- Collagen and elastin break down naturally from the enzymes collagenase and elastase.

Wouldn't it be great to have a bioactive in your skincare that helps block these enzymes? Well, you do.

As you know, our seaweed extract has fucoidan, which we work very hard to protect. Fucoidan helps block the pathways of collagenase and elastase. This stops them from reaching collagen and elastin. Thus, fucoidan helps to slow the degradation of skin cells. It is particularly effective at slowing the degradation of collagen and elastin.

Fucoidan is one excellent blocker!

Week #7: We've spent so much time talking about fucoidan and other bioactives found in our seaweed extracts we thought you would like to see them!

This video shows our laboratory process (aka precipitation) to measure the solids in our seaweed extract. The solids include fucoidan, laminaria, mannitol, trace minerals, and vitamins. This process involves adding an agent to the extract, which separates the solid particles from the liquid.

However, it's important to note that this is a measurement process. As mentioned in the Week #3 Fucoidan Challenge, we believe in seaweed's natural research and development value. Therefore, our approach focuses on preserving all bioactive compounds instead of separating or denaturing them. Our goal is to respect and maintain the integrity of these bioactives as they work together as a family.

Week #8: Paula Gayle from CBC's The Broadcast had several questions for Courtney on the Jan 23, 2024 show. Here's one of Paula's questions that led to fucoidan.

Can you give us a sense of what makes seaweed from this province different from seaweed from other places in the world?

7 Fathoms works with brown macroalgae, a brown seaweed known for its wonderful bioactive compounds. One of which is called fucoidan. This gets developed in the seaweed while it's out in the ocean. It is designed to help itself in turbulent and cold conditions. So, in Newfoundland and Labrador, we have wonderful water for seaweed to grow in. But the cold, turbulent waters here help develop bioactive compounds like fucoidan in the wild ocean. Again, it's to protect the seaweed in its function, but that gets translated to customers when we develop healthy extracts.

Join our weekly Tuesday emails for updates on new products, seaweed science, testimonials, and promos. Click [here to join](#).