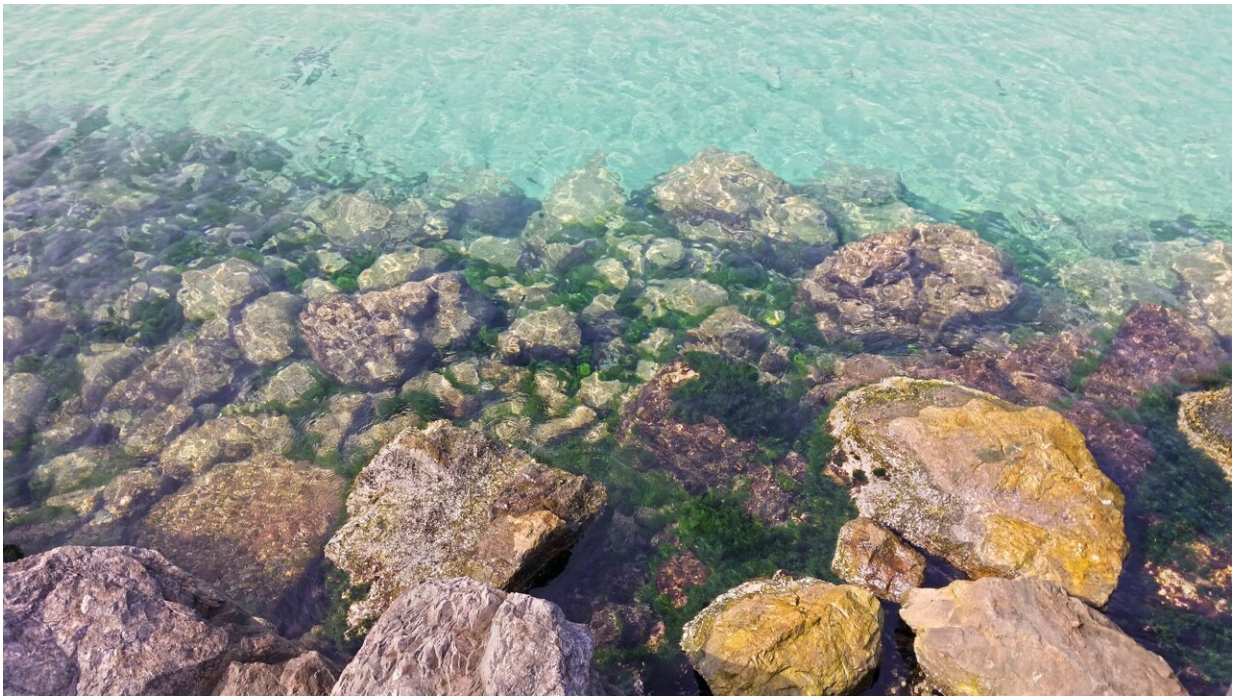


Compounds found in seaweed may reduce a serious digestive-tract illness

November 9 2023, by Vittoria D'Alessio



Credit: Unsplash/CC0 Public Domain

Roberto Saldana was 16 when he developed severe stomach pain and diarrhea, but two more years would pass before he was diagnosed with inflammatory bowel disease, or IBD.

Saldana, now 41 and a resident of the Spanish capital Madrid, said he was initially diagnosed with pancreatitis, an inflammation of the

pancreas that is rare in children and usually develops after years of alcohol abuse.

Algae avenue

"The pain was horrible," he said. "When the symptoms came back a second time, the doctors decided I should stay in hospital while they tried to figure it out and fix the problem. I ended up staying two months."

Help—from an unusual source—may now be on the way for people like Saldana.

A group of scientists is harnessing the anti-inflammatory properties of algae—seaweed and microalgae. They're part of a project called [Algae4IBD](#) that received EU funding to research the health potential of these natural organisms.

The diverse and extreme environments in which algae grow have led them to produce substances with antioxidant, antibacterial, antiviral or anti-inflammatory effects.

"These properties are of great value in medicine and might be very important in the fight against chronic disease," said Dr. Dorit Avni, an immunologist and a biochemist at the MIGAL Galilee Research Institute in Israel. She coordinates Algae4IBD, which runs for four years through May 2025.

There are 2.5 million people in Europe and 10 million worldwide who have IBD—an umbrella term used to describe a number of autoimmune conditions that trigger chronic inflammation of the gastrointestinal tract.

The two most common forms of IBD are Crohn's disease and ulcerative

colitis.

Both disrupt the body's ability to digest food, absorb nutrients and eliminate waste in a healthy manner. Symptoms, which are often severe, include stomach pain and cramping, diarrhea and appetite loss.

Unknown causes

Saldana has Crohn's disease and considers himself lucky. Unlike many people with IBD, he is mostly asymptomatic and his gut inflammation is kept at bay by medication.

Saldana is the innovation and patient engagement coordinator for the European Federation of Crohn's & Ulcerative Colitis Associations. It represents IBD patient groups in numerous European countries.

There's no cure for IBD and, at its worst, it can lead to blood clots, colon cancer and even death.

A prime challenge for researchers like Avni is to learn more about the biological factors such as genetics, hormones and nutrition underlying the disease. A top concern is that IBD is increasingly affecting young people, with diets and microbes playing possible roles.

"Not knowing the exact causes makes it harder to find a cure," Avni said. "But what we do know is that the rising consumption of ultra-processed food, and the lack of appropriate strategies to avoid foodborne microbes, mean more people are becoming ill with the disease and patients are getting younger. Some children as young as seven have symptoms."

Promising strains

Generally, as a first line of attack—and usually only short-term—an IBD patient is prescribed [anti-inflammatory drugs](#) to keep symptoms at bay.

While other drugs are often used to control symptoms over the longer term, none is failproof. All too often a patient will show improvement initially only for treatment to stop working later.

The Algae4IBD team has already revealed that some algae strains contain the anti-inflammatory properties needed to fight IBD symptoms.

It has also found that some types of seaweed are potent "prebiotics"—nutrients that feed healthy microbes in the colon to restore balance to the gut microbiome and to decrease "IBD problem creators" like the bacterium *E. coli*.

"We are now in the process of identifying the compounds responsible for this response and characterizing their chemical composition," said Avni.

So far, the 21 partners of Algae4IBD have created a species bank based on 1,000 algal varieties. The original specimens were taken from ocean floors, lakes and rivers.

The researchers are focusing on the 150 most promising specimens and preparing to test their healing properties on mice and on biopsies taken from IBD patients. The specimens come from EU countries including Estonia, France, Germany, Hungary, Ireland and Portugal as well as from Israel, according to Avni.

"Our final goal is to add the most bioactive algae to both pharmaceuticals and food," she said. "Someday soon, we may be keeping ourselves healthy with algae-enriched yogurt, smoothies and bread."

Non-invasive diagnosis

With IBD, it's typical for episodes of active illness to be followed by periods of remission. During flareups, patients need close monitoring to check that the drugs are working and the gut is healing.

The methods to monitor the condition of affected people are intrusive and unpopular with them.

Endoscopy is the gold standard for keeping tabs on the disease. It involves a doctor feeding a flexible tube—complete with a camera and tissue-sampling instrument—through a patient's mouth and into the small intestine or inserting a similar tube into the gut through the rectum.

Patients must prepare for the procedure, which often involves sedation, by fasting and taking medication to empty the contents of the colon.

"These are highly invasive and uncomfortable procedures and patients deserve better," said Christian Wiest, chief executive officer of iThera Medical, a German manufacturer collaborating with European research institutions to come up with a non-invasive method to diagnose and monitor IBD.

Laser and ultrasound

An [imaging technique](#) developed by iThera Medical was tested in a separate EU-funded research project. Called [EUPHORIA](#), the project ran from January 2019 through June 2022.

The technique, called multispectral optoacoustic tomography, or MSOT, uses a combination of laser and ultrasound to measure the blood concentration in the colon wall—an indicator of the degree of

inflammation.

Short-pulsed laser light is beamed at the intestine through the stomach wall. Sound waves bounce back, displaying the health of the tissue in the gastrointestinal tract on a screen.

"The experience for the patient is similar to having an ultrasound scan, with an operator moving a handheld probe across the stomach," said Wiest.

Researchers are still evaluating the trial's results, but analysis so far suggests MSOT holds promise.

"There is definitely a correlation between disease activity and the signal we receive through the colon wall," said Wiest.

While the jury is still out on whether MSOT will one day make endoscopy a thing of the past, he is confident the new technique has a role to play.

"We still don't know if our technique is as good as endoscopy," said Wiest. "With the much lower burden to patients, it will, however, be feasible to monitor their disease progression more closely and adjust the treatment as appropriate."

More information:

- [Algae4IBD](#)
- [EUPHORIA](#)

Provided by Horizon: The EU Research & Innovation Magazine

Citation: Compounds found in seaweed may reduce a serious digestive-tract illness (2023, November 9) retrieved 2 May 2024 from <https://medicalxpress.com/news/2023-11-compounds-seaweed-digestive-tract-illness.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.