

# Volcanic tsunami tests West Coast emergency systems

By JAMIE HALE  
The Oregonian

The tsunami that rippled across the Pacific Ocean on Saturday, Jan. 15, may have been a good test run for the Pacific Northwest's emergency alert systems, but it's not yet clear how useful the experience will be in preparing Oregonians for a major disaster.

Caused not by an earthquake but a massive eruption of an undersea volcano near the Pacific nation of Tonga, the explosion sent larger-than-normal swells up the Oregon, Washington and California coastlines in a rare event that researchers and emergency management officials are still trying to wrap their heads around.

Stephanie Ross, a geophysicist with the U.S. Geological Survey and a tsunami scenarios coordinator with the Pacific Coastal and Marine Science Center in Santa Cruz, California, said the volcanic tsunami was unprecedented in the modern era and the first time the U.S.



Mark Graves/The Oregonian

**The entire West Coast, including coastal Oregon, was under a tsunami advisory after an undersea volcano erupted in spectacular fashion near the Pacific nation of Tonga. Many Oregonians still took to the shoreline in Seaside, however. Throngs of beachgoers walked and played in the sand Saturday, Jan. 15, 2022, and the surf did not appear out of the ordinary.**

Tsunami Warning Centers have issued an alert based on a volcanic source.

"We know they're possible, but it's just not something that we deal with very often,"

Ross said. "There's just a lot of uncertainty around a complicated event like this."

What researchers do know is that there are a lot of differences between a

volcanic tsunami far off in the Pacific Ocean and a tsunami triggered by an earthquake, especially a Cascadia Subduction Zone earthquake that Oregonians

are most concerned about. One of the biggest differences is time — as in, how much time it takes for a tsunami to reach shore and how long people have to escape.

Harold Tobin, director of the Pacific Northwest Seismic Network and a professor of seismology at the University of Washington, said coastal communities would have only five to 10 minutes to flee a tsunami caused by a major earthquake just offshore. People on the coast should evacuate immediately if they feel an earthquake, he said, and not wait for an official alert.

In contrast, communities had several hours to prepare Jan. 15, and most didn't bother with evacuations, which proved to be unnecessary.

Tobin said the events were a "really good test run and reminder that we need to have tsunami preparedness at the top of our minds."

People should have heeded the alerts, he said, even though scientists didn't have

the usual playbook at hand with the volcanic tsunami.

For instance, he said, earthquakes are so baked into tsunami alerts that when the U.S. Tsunami Warning System issues a warning, it has to include the magnitude of the event. The volcanic eruption that caused Saturday's tsunami didn't have a magnitude, so officials simply input "0.1," he said, a figure that initially befuddled some researchers.

The unprecedented nature of the volcanic tsunami off Tonga also left officials uncertain about how long it would last, though they were able to predict how soon it would arrive. By the time waves began to swell along the Pacific coast, word had already spread across the region, aided by social media and media reports, as well as state and local alert systems.

But that time also gave people time to drive out to the coast and see the tsunami for themselves — an activity that researchers and emergency officials all adamantly condemn.

# Hemp compounds block COVID-19 from infecting cells, research shows

By GEORGE PLAVEN  
Capital Press

CORVALLIS — New research from Oregon State University reveals hemp might offer protection from COVID-19, adding to the list of potential benefits for the versatile crop.

A major use of hemp comes from deriving chemical compounds in the plant, called cannabinoids, which can then be infused in products such as oils, creams and oral supplements. Growing evidence suggests these cannabinoids can help with everything from relieving pain and anxiety to stimulating appetite in cancer patients.

According to a recently published OSU study, two

such compounds — specifically cannabigerolic acid, or CBGA, and cannabidiolic acid, or CBDA — also can block SARS-CoV-2, the virus that causes COVID-19, from entering human cells and preventing severe illness.

Richard van Breemen, a professor of pharmaceutical sciences at the Linus Pauling Institute and OSU College of Pharmacy, led the study. He said hemp is not a cure for COVID-19, nor is it a replacement for face masks and vaccines, but "another piece in the armor to help people stay healthy."

"It's going to help people. At least that's my hope," van Breemen said.

The way CBGA and CBDA work against the virus

is similar to vaccines and other antibodies, van Breemen said. By binding themselves to the virus' signature spike proteins, the acids essentially cut off a key pathway of infection.

Van Breemen and his research team began investigating hemp molecules in early 2020. At the time, lab access at OSU was restricted to coronavirus-related research.

"We looked for compounds that could bind to the spike protein, and hopefully prevent the virus from infecting the human cell," van Breemen said.

Using a form of mass spectrometry developed previously in the lab, the team screened for compounds

across a range of botanicals and hemp extracts. They identified CBGA and CBDA as having the highest affinity for binding to spike proteins in SARS-CoV-2.

But their lab work could only go so far, since they were unable to test the compounds on live virus samples. For that, the team partnered with Fikadu Tafesse at Oregon Health & Science University in Portland.

Results showed CBGA and CBDA were equally effective against the virus and two early variants. However, Breemen said more testing is needed to gauge effectiveness against other existing and future virus mutations, including the highly contagious omicron variant.

"These variants are well known for evading antibodies against early lineage SARS-CoV-2, which is obviously concerning given that current vaccination strategies rely on the early lineage spike protein as an antigen," Breemen said.

"Our data show CBDA and CBGA are effective against the two variants we looked at, and we hope that trend will extend to other existing and future variants," he added.

Another compound in licorice also was found to bind to the spike proteins during the initial screening of botanicals, Breemen said, but has not yet been tested against the live virus. "We need new funding for that," he said.

CBDA and CBGA are

abundant in hemp extracts, and may actually require less processing than cannabidiol, or CBD, one of the more commonly marketed cannabinoids.

Van Breemen, who serves on the faculty for OSU's Global Hemp Innovation Center, said the compounds, if taken orally, appear to offer a degree of protection and could increase demand for hemp production.

"What we do know about these cannabinoid products is they have a good safety profile. People are taking them already," he said. "I think in the long term, what we need are different therapeutic agents, drugs and treatments that work by a variety of mechanisms."

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