

Data Show Cannabis Terpenes May Slow COVID-19 Infection



By [Dr. Joseph Mercola](#) | mercola.com

STORY AT-A-GLANCE

- Terpenes are aromatic compounds found in cannabis with known antiviral properties. New data show they may inhibit SARS-CoV-2 from infecting cells by blocking ACE2 receptors
- SARS-CoV-2 uses the ACE2 receptor to bind with human cells. These receptors are found in the mouth, airway and intestinal tissue
- Scientists added terpenes to hand sanitizer hoping to develop a powerful hand cleaner

- Terpenes are found in medicinal cannabis, which has a positive effect on migraine treatment, pain control and the alleviation of gut conditions

The body of scientific evidence demonstrating the medicinal value of cannabis continues to grow and become more compelling. Your body makes its own cannabinoids that interact with the receptors in your brain, lungs, liver, kidneys, immune system, and other organs, tissues and blood vessels. They are activated by the therapeutic and psychoactive properties of the plant.¹

Cannabis can be bred to have high levels of cannabidiol (CBD) and low levels of tetrahydrocannabinol (THC) content. THC has a psychoactive activity, while CBD has no psychoactive properties. The plant also contains terpenes, which are the oils that give cannabis its distinctive flavor and odor.

To date, hundreds of compounds have been identified in the plant,² including cannabinoids, terpenes, and other phytochemicals. In China, Cannabis sativa has a long history of recorded use, dating back nearly 2,000 years.³ In old texts, researchers have found references to the application of cannabis for pain and mental illness.

Much of the current research has been on the relationship between CBD and THC to inflammation. However, during the first severe acute respiratory syndrome (SARS) epidemic in 2003 to 2004, researchers investigated the effects of terpenes found in cannabis and other plants and found they have antiviral properties.⁴

Twofold Testing on Specific Strains of Cannabis Sativa

Angiotensin-converting enzyme 2, or ACE2 receptors, provide an

entry point for SARS-CoV-2 to infect the human cell.⁵ This receptor is found on the surface of many types of cells, but most specifically in the oral and nasal mucosa, lungs, intestinal tract, liver, kidney, and brain.⁶

The virus uses spike-like proteins to bind with the ACE2 receptor, giving it entrance into the cell. Scientists are researching ways to use this pathway to modulate the entry of the virus into the cell with the hope of decreasing an individual's susceptibility to the disease. One team investigated the effect that cannabis has on ACE2 receptors.⁷

The researchers used extracts from hundreds of lines of *Cannabis sativa* in a computer-generated model of the human mouth, airway, and intestinal tissue. Their preliminary data show that the extract of 13 lines of *Cannabis sativa* that were high in CBD could keep the virus out of the cells.

They acknowledge that further large-scale validation is necessary, but the initial result may provide useful preliminary evidence that adding these extracts could be used as an adjunct therapy.

They suggest developing preventive treatments, such as the use of mouthwash, that may reduce viral entry through the oral mucosa. One of the researchers, Dr. Igor Kovalchuk, spoke with a reporter from the Calgary Herald about the results:⁸

"A number of them have reduced the number of these (virus) receptors by 73 per cent, the chance of it getting in is much lower. If they can reduce the number of receptors, there's much less chance of getting infected. It will take a long time to find what the active ingredient is – there may be many."

Past Data Support Antiviral Activity of Some Terpenes

A second team from the Israel Institute of Technology led by Dedi Meiri, Ph.D., spoke with a reporter from Health Europa about a formulation of terpenes extracted from cannabis being tested against Stars CoV-2.⁹

Health Europa reported after the SARS outbreak in 2002 that researchers found terpenes were effective antiviral agents and could reduce the severity and impact of infection by preventing the virus from penetrating human cells. Meiri said his lab is approved to conduct an investigation and colleagues are currently underway promoting two lines of study based on cannabis. He explained the initial study:

“First, we will try to identify the plant’s own molecules that are capable of suppressing the immune response to the COVID-19 coronavirus – which causes inflammation and severe disease – to lower the immune system response without suppressing it, thereby providing better complementary treatment to the steroids, which completely suppress the immune system.”

In the second study, researchers will be looking at how the cannabis molecule may affect the viral process of infected cells through the ACE2 receptor. Researchers have been looking for a way to impact ACE2 receptors since the first SARS outbreak in 2003.¹⁰

The team hopes terpenes found in cannabis will help modulate the cytokine storm – an overreaction of the immune system – associated with COVID-19, known to cause organ system failure leading to death.¹¹

In 2007, a study was published in the Journal of Medicinal

Chemistry in which researchers evaluated 221 phytocompounds for their activity against SARS. They induced cytopathogenic effects on cell cultures and tested terpenoids, lignoids, and curcumin against the cell cultures.¹²

The data showed that 22 compounds could inhibit 50% of the pathogenic cell proliferation and viral replication. The researchers suggest specific types of diterpenoids and lignoids have a powerful effect against the SARS virus in vitro.

Scientists have also found terpenoids may have a synergistic effect in cannabis that may help to treat pain, inflammation and bacterial infections in combination with other phytochemicals.¹³

Social Media Headlines Overstated Current Facts

While the research is promising, some who republished certain information overstated the facts. The headline “Cannabis May Stop Coronavirus From Infecting People, Study Finds” first appeared on the website MerryJane.¹⁴ The headline was quickly picked up and passed through social media until Facebook flagged it for “false news and misinformation” as reported by Politifact.¹⁵

However, while the headline may have been misleading, the content in the MerryJane article followed the research, communicating the data and the shortcomings of the study. Forbes Magazine also picked up the story. In their article, the writer linked an article in the New York Post¹⁶ with the viral content on Facebook and finally to a quote that appears to have come from the New York Post:¹⁷

“And a rally ‘vaguely’ timed, as MarketWatch reporter Max Cherney observed, with the New York Post’s publication Thursday of its take on the big story that had gone viral on Facebook earlier that month, and was later flagged as fake news: the claim, first made in a preclinical paper published in April, by Canadian scientists that certain high CBD strains of ‘cannabis could prevent and treat coronavirus.’”

Kovalchuk spoke with a reporter from Politifact and confirmed the headline was an overstatement.¹⁸ Kovalchuk was also interviewed by the Forbes reporter and said:¹⁹

“It reduces the possibility to get infected. I never said it would prevent or block it entirely. It is a possible treatment. A treatment is not a cure. When [news reports] say it treats COVID, or can potentially treat COVID, they are absolutely right.”

Terpene-Extract May Boost Hand Cleaning for COVID-19

In mid-April, Vanguard Scientific announced they had developed a new hand cleaner made from terpene extract. The hand cleaner uses an alcohol-based sanitizer following CDC recommendations, into which the company added terpenes derived from cannabis. They believe this “may boost the mixture’s antibacterial, antimicrobial and antiviral effects.”²⁰

The company also began an open-source project in which they released the recipe and the standard operating procedures for free. They’ve called it Project Terpenes-Clean and hope it will bring together scientists from around the world to develop a powerful hand cleaner. Matthew Anderson is CEO of Vanguard Scientific and commented on the program and the

product:²¹

“Like all industries, the botanical extraction industries have been hit hard by the COVID-19 crisis. As a company working with clients to target specialized botanical extracts, we’ve focused on finding opportunities to help in the fight against the virus.

We know that traditional healers have used plant-derived compounds as powerful medicine for centuries, so we’re offering our expertise to the rest of the industry so others can join us in creating a soap-less hand cleaner that leverages industry science and increases the supply of hand cleaning products.

Open source drives innovation while promoting collaboration and adoption to ensure maximum transparency: anyone can inspect an open source project for errors or inconsistencies and that matters in regulated industries.”

Cannabinoids Affect Cardiovascular System

Researchers presented data at a 2019 meeting of the American Heart Association showing that young people who had been diagnosed with a cannabis use disorder had a 47% to 52% higher risk of being hospitalized for an irregular heartbeat, also known as an arrhythmia, as compared to those without the disorder.²²

In the study, researchers use data from more than 67 million hospital patients. The effect appeared to be dependent on the dose. Lower doses were linked to a rapid heart rate while higher doses were linked to heart rates that were too slow.²³

Results from a second study showed that those who used cannabis for more than 10 days a month had a 2.5 times increased risk of stroke compared to non-users.²⁴ Those who also [smoked cigarettes](#) or [e-cigarettes](#) had an even higher risk – more than three times that of nonusers.

Your body has cannabinoid receptors in the brain, lungs, liver, kidneys, and other organs and tissues, as well as blood vessels. Harvard Medical School describes the action cannabinoids have on heart health:²⁵

“One of the few things scientists know for sure about marijuana and cardiovascular health is that people with established heart disease who are under stress develop chest pain more quickly if they have been smoking marijuana than they would have otherwise.

This is because of complex effects cannabinoids have on the cardiovascular system, including raising resting heart rate, dilating blood vessels, and making the heart pump harder. Research suggests that the risk of heart attack is several times higher in the hour after smoking marijuana than it would be normally.”

Benefits of Medical Cannabis

Considering the distribution of [cannabinoid receptors](#) in the body, it's no surprise that appropriate dosages can help alleviate problems. Evidence has been increasing for its therapeutic use in the treatment of migraines and headaches, as well as in assisting detoxification and weaning from [opioid addiction](#).²⁶

The NIH has awarded nine research grants totaling \$3 million to analyze the potential cannabis may have on pain relief and strengthen the evidence. The studies are focused on the

biological activity of natural substances in cannabis that are not psychoactive to steer clear of “THC’s disadvantages.”

Helene Langevin, director of National Center for Complementary and Integrative Health, spoke out about the need for safe and effective pain relief options, saying:²⁷

“The treatment of chronic pain has relied heavily on opioids, despite their potential for addiction and overdose and the fact that they often don’t work well when used on a long-term basis. There’s an urgent need for more effective and safer options.”

It’s important to note that specific strains influence the ratios of phytochemicals, cannabinoids, and terpenes, which is a crucial consideration. Results from one study led by researchers from the University of Massachusetts and the University of Bath confirmed the scientific basis for the use of cannabinoids in alleviating gut problems, specifically inflammatory bowel disease.²⁸

Some people are uncomfortable with the [use of medical cannabis](#) or the idea of legalizing it. I urge you to evaluate the research and how doctors are using it in clinical practice. You’ll find more information about the impact it has on gut health, on your overall health and dozens of cited studies in these past articles:

- [Medical Cannabis Offers New Hope for Those With Inflammatory Bowel Diseases](#)
- [Cannabis in Modern Medicine](#)
- [Can Cannabis Fight Tumors?](#)
- [Cannabis: A Lost History](#)