

Could a chewing gum really reduce the spread of COVID-19?

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Credit: Thirdman from Pexels

An experimental chewing gum could reduce the spread of SARS-CoV-2, the virus that causes COVID-19, according to [a recent study](#) published in the journal *Molecular Therapy*. You might already have [noticed](#)

[headlines](#) calling the findings "fresh hope" in our fight against COVID-19. But how excited should we be? And could this gum work against Omicron, the newest variant of concern?

An experimental chewing gum containing a protein that "traps" coronavirus particles could limit the amount of virus in saliva and help curb transmission when infected people are talking, breathing or coughing, researchers believe.

<https://t.co/LkcbQKL4su>

— Inquirer (@inquirerdotnet) [November 23, 2021](#)

Evidence shows people infected with SARS-CoV-2 have [high levels](#) of virus in their saliva. So researchers in the US wanted to investigate whether a specially designed chewing gum could reduce the amount of virus in the mouth, and therefore potentially reduce its spread.

Chewing gum to promote oral health is not a new idea. Studies [have shown](#) that chewing gums containing certain substances such as calcium and bicarbonate can improve [oral health](#), reducing the incidence of dental ailments and cutting the numbers of [harmful bacteria](#). But specifically targeting a virus in this way is a novel approach.

SARS-CoV-2 gains entry into [human cells](#) by latching onto ACE2 proteins, which are found on the surfaces of certain cells in our body. The researchers produced a gum containing high levels of ACE2 proteins, produced in plants, with the idea being that the ACE2 proteins in the chewing gum could "trap" virus particles in the mouth, minimizing the opportunity they have to infect our cells and spread to other people.

To test the effectiveness of the chewing gum, the researchers took saliva samples from patients with COVID-19 and mixed these samples with a powdered form of the gum. They found the treated saliva had

significantly reduced numbers of SARS-CoV-2 [virus particles](#) compared to those treated with a placebo (the same gum but without the ACE2 [protein](#)).

The researchers also demonstrated that the gum prevented a [pseudotyped virus](#) (a harmless virus with the SARS-CoV-2 spike protein on its surface) from infecting cells in the lab. As little as 5mg of the gum was associated with significantly reduced viral entry into cells, while 50mg of the gum reduced viral entry by 95%. This suggests the ACE2 gum severely hinders the ability of the SARS-CoV-2 spike protein to infect cells.

Reasons for caution

Although these results seem promising, there are a number of reasons we can't view this gum as a pandemic gamechanger just yet. First, this is early-stage research, meaning the experiments were conducted in a lab in controlled conditions rather than with real people.

The conditions in a lab experiment are going to be different to the conditions in a person's mouth. While the researchers used a chewing simulator machine to show that the motion of chewing doesn't affect the integrity of the ACE2 protein in the gum, there are other questions for which we don't yet have answers.

For example, would the environment in a person's mouth, such as body temperature and oral bacteria, impact the effectiveness of the gum? And how long would one piece of gum continue working for? It will be interesting to see whether the gum produces similar effects in people as it has in the lab if the research progresses to this stage.

Second, although the gum significantly reduced infection of a virus that carried the SARS-CoV-2 spike, the researchers didn't use the full SARS-

CoV-2 virus in their experiments. While the method they used, [virus pseudotyping](#), is a tried and tested [scientific method](#) to assess virus entry into cells, it would be interesting to see how the gum affects the full SARS-CoV-2 virus.

As for whether the gum would be effective across different COVID variants, such as Omicron, the principles of virology give us reason to be optimistic. Regardless of the variant and its mutations, SARS-CoV-2 gains entry into human cells by latching on to ACE2 proteins—which is key to how the gum works. That said, this is another question we won't know the answer to for sure until the product is tested in real-world trials.

Finally, it's important to understand what this gum is designed for. The researchers point out that its main use is likely to be reducing viral spread from people with COVID-19 to others, particularly in clinical settings. It's unclear how well it would work as a prophylactic to prevent uninfected people getting the [virus](#), particularly when SARS-CoV-2 can be transmitted [through multiple routes](#) including the eyes and nose as well as the mouth.

All the same, this gum could have exciting prospects in a clinical setting—for example reducing spread in dental surgeries or COVID hospital wards. When used in combination with current methods such as mask wearing, ventilation and vaccination, it could be another weapon in our arsenal for preventing the spread of COVID-19. But further research is needed before we can expect to be chewing it.

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