

COVID and your gut: How a healthy microbiome can reduce the severity of infection—and vice versa

December 30 2022, by Samuel J. White and Philippe B. Wilson



Credit: Laura James from Pexels

A vast combination of microorganisms live in our gut, including bacteria, fungi and viruses. Collectively, we refer to this as the [the](#)

[microbiome](#).

Despite their tiny size, these microbes have significant effects on our health and well-being. In fact, the microbiome is often referred to as the "second brain" due to the extensive relationship it has with the body's organs and systems.

One role in particular the microbes in our gut play is supporting [immune function](#). They help to control local and systemic inflammation, the process by which the immune system protects us from harmful pathogens.

So it's not entirely surprising that [research has shown](#) the make-up of [bacteria](#) in the gut may influence the severity of a COVID [infection](#). At the same time, evidence is beginning to suggest a COVID infection could [affect the balance](#) of bacteria in the gut, which might go some way to explaining why some people have persistent symptoms after a COVID infection.

The microbes in our gut provide essential signals for our immune responses across the body, including in the lungs. A "healthy" gut microbiome comprises a broad range of bacteria, though is not identical in every person. Studies have previously shown that a [healthy gut microbiome](#) can improve the immune response to respiratory infections by regulating immune cells and messages.

On the flip side, evidence shows a poorer composition of gut bacteria increases susceptibility to [influenza infections in the lungs](#), and leads to reduced [clearance of germs](#) from the lungs in mice.

With COVID, it similarly appears that the make-up of the gut microbiome can influence the course of disease. Research has shown [an association](#) between the microbiome profile and levels of inflammatory

markers in patients with COVID, where patients with a poorer combination of gut bacteria show signs of too much inflammation. This suggests the microbiome influences the severity of a COVID infection via effects on the immune response.

Unbalancing the microbiome

Just as the composition of our gut bacteria appears to influence how we fare with COVID, the reverse might also be true—a COVID infection could affect the make up of our gut bacteria. Specifically, it seems COVID might throw off the balance between "good" and "bad" microbes in a person's microbiome.

Studies have shown a significant difference in the gut microbiome between [COVID patients](#) and healthy people. We see a reduction in [bacterial diversity](#) in the gut in COVID patients—so a smaller range of species, as well as substantial differences in the species of bacteria present.

Notably, scientists have observed a reduction in a group known as [commensal bacteria](#) in COVID patients, which act on the immune system to help prevent invasion by pathogens. This may increase our risk of other infections after COVID. Simultaneously, there appears to be an increase in a variety of opportunistic pathogenic bacteria that are known to cause infections.

This "imbalance" is called dysbiosis, and these changes have been shown to still be present in patients [30 days post-infection](#).

Recent studies have suggested gut dysbiosis is linked to the movement of gut bacteria [into the blood](#) during a COVID infection. In mice, COVID caused changes in a variety of parameters associated with gut barrier permeability, meaning things can theoretically move more easily through

the gut wall.

In 20% of human COVID patients in this same study, certain bacteria from the gut had migrated into the bloodstream. This group was at higher risk of developing a secondary infection in the blood.

Research is now also showing that dysbiosis following COVID may contribute to [long COVID](#), with gut dysbiosis more prevalent in patients presenting with [long-term COVID symptoms](#). This makes sense because dysbiosis seems to put the body in a heightened and constant state of [inflammation](#)—something that's associated with chronic COVID symptoms.

Supporting your immunity

As we continue to develop a more comprehensive understanding of gut microbes and their role in inflammation, how can you help keep your immune system healthy to protect yourself against COVID and other infections?

Certain nutrients, [including](#) vitamins A, C, D and E as well as iron, zinc and omega-3 fatty acids, all have positive effects on immune responses against viral infection.

A [Mediterranean diet](#), which is rich in vitamins, minerals and dietary fiber, has an anti-inflammatory effect in the gut. Interestingly, a strain of bacteria known as *Faecalibacterium prausnitzii* [is key to immune regulation](#). It's frequently low in the western diet, but abundant in the Mediterranean diet.

Ideally you should avoid too many refined cereals, sugars and animal fats, which can all [heighten inflammation](#) in the body.

Probiotics, supplementary blends of live bacteria, may also have benefits. A blend of bacterial strains *Lactiplantibacillus plantarum* and *Pediococcus acidilactici* [was shown to reduce](#) the quantity of virus detected in the nasal passage and lungs, as well as the duration of symptoms in COVID patients.

This combination also significantly increased the [production of COVID-specific antibodies](#), suggesting probiotics act directly by interacting with the immune system, rather than solely changing the composition of the gut [microbiome](#).

Finally, moderate [exercise](#) can also help support the [immune system](#) to fight COVID.

This article is republished from [The Conversation](#) under a Creative Commons license. Read the [original article](#).

Provided by The Conversation

Citation: COVID and your gut: How a healthy microbiome can reduce the severity of infection—and vice versa (2022, December 30) retrieved 22 June 2024 from <https://medicalxpress.com/news/2022-12-covid-gut-healthy-microbiome-severity.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.