

# A new approach to averting inflammation caused by COVID-19

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A colored scanning electron micrograph of the SARS-CoV-2 virus. Credit: NIAID

Severe COVID-19 illness can result in excessive inflammation throughout the body, including the lungs, heart and brain. University of Minnesota Twin Cities student Molly Gilligan recently published an

article in the journal *Cancer & Metastasis Reviews* that studied the human body's robust inflammatory response to the SARS-CoV-2 virus, which is now recognized as a hallmark symptom.

According to the publication, controlling the body's [inflammatory response](#) to SARS-CoV-2 will likely be as important as antiviral therapies or a potential vaccine. Individual mediators—called cytokines—cause inflammation in response to tissue injury or infection. Mediators are a substance or structure that mediates a specific response in a bodily tissue.

Rather than blocking cytokines, [medical staff](#) could turn off virus-induced inflammation by broadly activating the body's natural inflammation-clearing activities.

"We are now recognizing the importance of controlling this robust inflammatory response in COVID-19 infection in order to reduce associated [organ damage](#) and mortality," said Gilligan, a student at the Medical School. "Finding new ways to dampen the body's inflammatory response to COVID-19 will likely be as important as finding effective antiviral therapies to control COVID-19 infection and reduce life-threatening organ damage."

"Moreover, these compounds have been found to be non-toxic and non-immunosuppressive in ongoing clinical trials for other [inflammatory diseases](#), making them even more promising candidates for rapid clinical translation," said Gilligan.

The research found that:

- one hallmark of SARS-CoV-2 infection is a cytokine storm, which is a drastic increase in immune cell production of cytokines;

- SARS-CoV-2 causes unchecked inflammation that can cause extensive organ damage, such as lung failure;
- current therapeutic strategies in COVID-19 focus on inhibiting a single pro-inflammatory cytokine rather than broadly inhibiting the body's inflammatory response;
- [lipid mediators](#) derived from omega-3 fatty acids serve as the body's natural "stop" signals to inflammation.

Increasing levels of these lipid mediators in the body could be a new therapeutic approach to preventing life-threatening inflammation caused by SARS-CoV-2.

"What is exciting for us is that these lipid mediators that 'turn off,' or resolve, inflammation are already in clinical trials for other inflammation-driven diseases, such as eye disease, periodontal disease and pain," said Dipak Panigrahy, an assistant professor of pathology in Beth Israel Deaconess Medical Center. "The mediators can quickly be applied to turn off inflammation in COVID-19 patients."

**More information:** Dipak Panigrahy et al, Inflammation resolution: a dual-pronged approach to averting cytokine storms in COVID-19?, *Cancer and Metastasis Reviews* (2020). [DOI: 10.1007/s10555-020-09889-4](#)

Provided by University of Minnesota

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