

Researchers propose novel approach to limit organ damage for patients with severe COVID-19

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Patients with severe COVID-19 frequently experience a life-threatening immune reaction, sometimes called a cytokine storm, which can lead to

respiratory failure, organ damage and potentially death. With no FDA-approved treatment currently available for SARS-CoV-2, the virus that causes COVID-19, researchers are racing to find ways to stop the virus or the inflammatory overreaction it provokes in its tracks.

In a paper published in *Cancer and Metastasis Reviews* and selected by the journal as the featured publication, a team of researchers from Beth Israel Deaconess Medical Center and Brigham and Women's Hospital propose that controlling the local and systemic inflammatory response in COVID-19 may be as important as anti-viral and other therapies.

Led by Dipak Panigrahy, MD, of the Cancer Center at BIDMC, and Charles N. Serhan, Ph.D., DSc, director of the Center of Experimental Therapeutics and a member of the Department of Anesthesiology, Perioperative and Pain Medicine at Brigham and Women's Hospital, the researchers suggest that a family of [molecules](#) naturally produced by the [human body](#) may be harnessed to resolve inflammation in patients with severe COVID-19, thereby reducing the acute respiratory distress and other life-threatening complications associated with the viral infection.

"Controlling the body's inflammatory response is key to the management of COVID-19 and may be as important to managing the pandemic as anti-viral therapies or a vaccine," Panigrahy said. "Our team proposes using molecules made by the body called pro-resolution lipid mediators—which are currently in clinical trials for other [inflammatory diseases](#)—as a novel approach to turning off the inflammation and preventing the cytokine storm caused by COVID-19."

Cytokines are released by the body as part of its normal immune response to injured or infected tissues. Typically, the body also releases chemicals to put an end to—or resolve—the inflammatory response. But in a significant percentage of patients with severe COVID-19, the cytokines unleashed to kill the virus also do damage to infected lung

cells. In turn, this injury to the lung tissues triggers additional inflammation, and the so-called "cytokine storm" begins to spiral out of control.

Naturally occurring molecules called resolvins—discovered by Serhan and colleagues at BWH in 2002—actively turn off inflammation. Panigrahy, Serhan and colleagues have previously demonstrated that resolvins and related pro-resolution molecules could play a role in preventing cancer metastasis and progression. This class of molecules are also currently in [clinical trials](#) investigating their use against other inflammatory diseases, such as ocular, periodontal, and inflammatory bowel disease. Now, the scientists suggest, they could be re-deployed for the management of COVID-19.

"A [paradigm shift](#) is emerging in our understanding of the resolution of inflammation as an active biochemical process," said Serhan. "Activating the body's own resolution pathways with the use of resolvins and related pro-resolution molecules—which, importantly, promote blood clot removal—may complement current treatment strategies while limiting severe organ damage and improving outcomes 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 Beth Israel Deaconess Medical Center

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