

Reproductive hormone may curb COVID-19 inflammation, prevent cytokine storm

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Researchers have used "omics" data containing genetic profiles of drugs to identify the hormone oxytocin as a possible treatment for COVID-19, the disease caused by the novel coronavirus (SARS-CoV-2). The study is published in *Physiological Genomics*. It was chosen as an APSselect article for October.

Increased inflammation that leads to a "cytokine storm"—in which the body attacks its own tissues—remains one of the most serious and least understood complications of COVID-19. To date, there are no medications approved by the U.S. Food and Drug Administration to treat COVID-19, which means that "repurposing existing drugs that can act on the [adaptive immune response](#) and prevent the cytokine storm in early phases of the disease is a priority," authors of a new study wrote.

Oxytocin, a hormone produced in the brain, is involved in reproduction and childbirth. A synthetic form of oxytocin, frequently known by its brand name Pitocin, is given by an IV to some people to help labor progress and to stop bleeding after childbirth. Oxytocin also has [anti-inflammatory](#)

[properties](#), which promote an immune response.

Previous research suggests the hormone protects against toxic injury and reduces levels of inflammatory substances in the lungs. Studies have also shown that cultured [human cells](#) with reduced expression of oxytocin receptors have higher levels of inflammatory proteins and oxidative stress.

The researchers of the new study used the National Institutes of Health's Library of Integrated Network-Based Cellular Signatures database to analyze characteristics of genes that have been treated with drugs closely related to oxytocin. They found one drug in particular, carbetocin, has similar characteristics (called a signature) to genes with reduced expression of the inflammatory markers that trigger cytokine storm in people with COVID-19. Carbetocin's signature indicates that the drug may promote the activation of T cells, which are immune cells that play an important role in [immune response](#). Carbetocin's signature is also similar to that of lopinavir, an antiretroviral medication already being explored as a treatment for COVID-19. All of these factors point to the promising potential of oxytocin as a targeted treatment for coronavirus-related cytokine storms.

"Understanding the mechanisms by which [oxytocin] or the [oxytocin system] can be a new immune target is crucial," the research team wrote. However, "safety and efficacy of intravenous [oxytocin](#) in hospitalized patients with COVID-19 remains to be assessed."

"Oxytocin's anti-inflammatory and proimmune functions in COVID-19: a transcriptomic signature-based approach" is published in *Physiological Genomics*.

More information: Ali S. Imami et al. Oxytocin's anti-inflammatory and proimmune functions in COVID-19: a transcriptomic signature-based approach, *Physiological Genomics* (2020). [DOI: 10.1152/physiolgenomics.00095.2020](#)

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