COVID-19: Latest news and resources

NEWSLETTER MEDICAL NEWS TODAY

Nitric oxide may be an effective treatment for COVID-19

New research has suggested that the inhalation of nitric oxide may be a way to reduce the effects of COVID-19.

Could inhaled nitric oxide play a role in treating COVID-19?

A new review of scientific literature indicates that inhaled nitric oxide may treat some severe effects of COVID-19, some of which can be fatal.

The research, appearing in the journal *Nitric Oxide*, paves the way for future research to see whether the theory stands up to practice.

Stay informed with live updates on the current COVID-19 outbreak and visit our coronavirus hub for more advice on prevention and treatment.

Vaccines and therapies

The sudden emergence and rapid spread of SARS-CoV-2 have left scientists urgently seeking therapies to slow the spread of the virus and relieve the symptoms of the disease that it can cause, COVID-19.

As well as being a direct threat to human life, COVID-19 has also overwhelmed critical care infrastructure around the world, imperiling the lives of people who do not have the disease but nonetheless need urgent access to critical care.

While positive steps toward a vaccine are underway, none has been approved for use. Further, if a vaccine is realized, distributing and administering it to even the most vulnerable groups globally is likely to take time.

Finally, the period during which a vaccine confers immunity could vary, ranging from permanent immunity to that lasting only a few months.

As a consequence, much research is attempting to identify effective treatments that may not “cure” the disease but that nonetheless reduce its severity, potentially saving lives and reducing the severe strain on intensive care units.

In this context, a team of researchers, many from The George Washington University School of Medicine and Health Sciences, in Washington, D.C., have assessed whether nitric oxide may play a role in treating COVID-19.

Nitric oxide

Currently, doctors use nitric oxide when people have very lowTrusted Source blood oxygen levels, often as a consequence of acute respiratory distress syndrome.

However, it is not always effective. While it can raise a patient's blood oxygen level, a 2016 review published in the journal *Anaesthesia* found that the treatment did not significantly improve mortality rates.

While research does not indicate that nitric oxide necessarily improves the chances of survival in people with acute respiratory distress syndrome, scientists working with cell cultures did find that it impeded the replication of SARS-CoV, which emerged in 2002.

In the current research, the team chose to focus on nitric oxide because, as they write, it is "an antimicrobial and anti-inflammatory molecule with key roles in pulmonary vascular function in the context of viral infections and other pulmonary disease states."

So the researchers reviewed the rationale for "nitric oxide use for the pathogenesis of COVID-19", with a focus on "its potential for contributing to better clinical outcomes and alleviating the rapidly rising strain on healthcare capacity."

A COVID-19 therapy?

SARS-CoV is different from the virus responsible for the current pandemic, SARS-CoV-2, but the two share many features: Both are coronaviruses, they function in comparable ways, and they share around 79% of their nucleotide sequences, as the authors of the present study point out.

As a consequence, and given that the efficacy of nitric oxide in treating acute respiratory distress syndrome has not been conclusively proven or disproven, the authors argue that nitric oxide could play a part in treating COVID-19.

According to Dr. Adam Friedman, co-author of the present research and interim chair and professor at the school of medicine's Department of Dermatology, "Nitric oxide plays key roles in maintaining normal vascular function and regulating inflammatory cascades that contribute to acute lung injury and acute respiratory distress syndrome."

> Interventions that are protective against acute lung injury and acute respiratory distress syndrome can play a critical role for patients and health systems during the pandemic."

It should be noted that the research is a review of the literature — it attempts to establish a rationale for the use of nitric oxide in people with COVID-19. What is now required is real-world evidence demonstrating that this is a safe and effective therapy.

Nonetheless, given the disease's major health effects and the profound societal, cultural, and economic consequences of the pandemic, there is

urgency in identifying effective treatments and corroborating the rationale with research.

As Dr. Friedman notes, “With the emergence of COVID-19 as a pandemic with the ability to overwhelm the body and our healthcare infrastructure, patients have a pressing need for effective agents that can slow the disease in their bodies and in their communities.”

For live updates on the latest developments regarding the novel coronavirus and COVID-19, click here.