Nobel Prize-Winning Scientist Explains Why New Study in New England Journal of Medicine May Point To Nitric Oxide as Successful Treatment For COVID-19

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LOS ANGELES, June 8, 2020 /PRNewswire/ -- Although the recent study "Pulmonary Vascular Endothelialitis, Thrombosis, and Angiogenesis in COVID-19" by Ackermann, et al does not include any mention of nitric oxide, many of the world's leading researchers

and scientists agree that there are clear implications and correlations regarding nitric oxide as a viable treatment for COVID-19.

The study was conducted by an international team of medical scientists who compared the lungs of patients who died from COVID-19 with lungs of patients who died from influenza as well as healthy lungs donated for transplantation. These researchers discovered an unexpected disease pattern in COVID-19 lungs: The virus invades the cells that line blood vessels, called endothelial cells, and this was accompanied by blood clots.

Compared to the flu, COVID-19 lungs had 9-fold more blood clots and the blood vessels were injured by the virus, causing an unusual reaction of blood vessel growth.

Louis J. Ignarro, PhD, Nobel Prize-Winning Scientist and UCLA Distinguished Professor Emeritus, explains the significance the results of this study have on nitric oxide as treatment for COVID-19.

"Basically, this study shows that the coronavirus causes destruction of the capacity of blood vessels in the lungs to produce nitric oxide (NO). The virus destroys the vascular endothelial cells (the name for the cells that line blood vessels), which are the cells that produce NO. When NO is deficient, the result is increased blood clotting or thrombosis. The study reveals that the lungs from patients who died from COVID-19 are characterized by tiny blood clots in the lungs, which led to tissue inflammation, destruction, and pneumonia," says Ignarro.

Warren Zapol, MD, emeritus Anesthetist-in-Chief at Massachusetts General Hospital and the Reginald Jenney Professor of Anaesthesia at Harvard Medical School emphasizes Ignarro's point, stating that "The endothelial cells of the lung are the primary generators of nitric oxide," and that "Nitric oxide is a selective pulmonary vasodilator when you breathe it. It only dilates the lung, it doesn't dilate the body."

Dr. Zapol is responsible for inventing the treatment of inhaled nitric oxide for newborn babies that suffer from poor oxygen levels, leaving their skin blue. Each year, inhaled nitric oxide turns thousands of newborns from blue to pink (the healthy color).

"Although nitric oxide is never mentioned in the results or conclusion section of the study by Ackermann, et al., the study leads one to conclude that a deficiency in NO is at least one cause of the devastating effects of SARS CoV-2 in the lungs of Covid-19 patients," says Ignarro.

Ignarro goes on to say that "This would justify the ongoing clinical trials with inhaled NO in COVID-19 patients." Additionally, Ignarro notes that "This study may also explain why adults with endothelial dysfunction, such as diabetes and other cardiovascular disorders, are at higher risk for COVID-19."

Keith Scott, MD, MSc, FCCM, Professor and the clinical trial's Principal Investigator for the nitric oxide trials at LSU Health Shreveport says, "Teasing out the influence of naturally produced NO on this process is difficult. What I am very encouraged about is the demonstration of virus in the endothelial cells of the lung tissue. Because of the virucidal properties of NO, high dose administration of inhaled NO makes even more sense because the gas directly affects the endothelium and could very well mitigate that process."

Dr. Scott goes on to discuss nitric oxide and biomarkers - "One of the things we have started doing a few weeks ago is measuring bio-markers that are affected with an endothelial injury during and after inhaled nitric oxide treatment. We will soon know once the process starts and if it is reversible. Regardless, I believe based on early indications that nitric oxide is an effective treatment along with other therapies. It (nitric oxide) can profoundly improve oxygenation and that can't be a bad clinical marker."

Pankaj Arora, MD, Nitric Oxide Clinical Trial Lead Researcher at the University of Alabama at Birmingham (UAB), and Vibhu Parcha, MD, Fellow of Cardiovascular Disease at the University of Alabama at Birmingham, discuss the immense significance and positive implications of the study and nitric oxide. "Apart from having a potential antiviral effect, NO improves lung function by improving blood supply to the functional portions of the lung. Additionally, NO can reduce inflammation and prevent clotting within the blood vessels of the lung. Both increased inflammation and clotting in the blood vessels are a major contributor to the disease pathology, as highlighted from the current study.

Multiple international trials are ongoing, including the one at UAB, evaluating these potential roles of NO in COVID-19 patients." However, Arora and Parcha go on to say that nitric oxide as treatment for COVID-19 can be answered only through "robust and rigorous clinical trials" such as the one ongoing through the University of Alabama at Birmingham and that any isolated treatment is "unlikely to be sufficient in itself."

About Louis J. Ignarro

Louis Ignarro is a medical research scientist who was awarded the Nobel Prize in Physiology or Medicine for his breakthrough discoveries of nitric oxide (NO) and how NO positively impacts health and longevity. His discovery of this unique signaling molecule and all of its biological actions ranging from lowering your blood pressure to stimulating penile erection and sexual arousal is widely known as the information that led to the development of Viagra.

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