



Editorial Note

## Increased Oxidative Stress in COVID-19 Patients

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As we all know, Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV-2 virus) is responsible for causing COVID-19 and globally it was declared an outbreak of public health emergency and later, as a pandemic by the World Health Organization (WHO).

This virus accesses the host cells and directly attacks epithelial linings of the airways i.e., the upper respiratory tract or the lower respiratory tract, sometimes both. People, who fall sick with COVID-19 experience mild to severe symptoms, some will be remained asymptomatic.

There are some people, who are at high higher risk which may lead them to be hospitalized and some may require intensive care unit, and some may need ventilator support and some may die. This is how this tiny invisible virus plays with the host. Therefore it can be named under a notorious virus.

The COVID-19 infection pounces with some mild symptoms like fever, cough, headache, impaired consciousness, seizures, dysphagia, oral lesions and severity leads to severe ARDS, cardiac injury, acute kidney injury, liver dysfunction and sometimes multi-organ-dysfunction in patients who are having previous health issues like pneumonia, cardiac disease, blood clots, kidney disease etc.

In addition, it is known that the infection is associated with an inflammation process that is related to the imbalance in antioxidant system. Due to the changes

that occur in cellular level, the oxidative stress was seen. The preferred organ to the virus attack is lungs as it is high-oxygenated in the human body. There are chances for the multiple lung diseases like vasoconstriction, hypoxemia, hypoventilation which further lead to Reactive Oxygen Species (ROS) as a key role of the oxidative stress. Oxidative stress is the main objective for causing the physiological as well as metabolic alterations. Therefore, once COVID-19 virus attacks, it triggers to various diseases in the body.

### Oxidative stress in COVID-19 patients

Oxidative stress is the main part for the pathogenesis of virus attack. Different environmental exposures like such as smoke, air pollutants, as they release more free radicals, have high levels of lipid peroxidation products with a decrease in antioxidants (vitamin E) in the distal respiratory tract compared to non-smoking controls.

This can cause inflammation and higher release of protease. Acute lung injury (ALI) and its most serious form, acute respiratory distress syndrome (ARDS) are common complications in critically ill patients and are responsible for significant morbidity and mortality

Therefore, with the increase or supplement deficient antioxidants, in particular GSH and non-enzymatic antioxidants, including vitamins and trace elements; or trap the ROS directly. Also, with the half-life of the antioxidants supplemented; targeting of the appropriate tissue, organ or cells the COVID-19 virus attacked patients can be back to normal life-style.