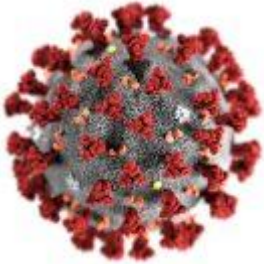# Statins: improved survival rates and reduced mortality rate in COVID-19 patients.

The novel coronavirus known as SARS-CoV-2 is the etiological agent of the disease termed coronavirus disease 2019 (COVID-19). The virus was declared a pandemic on the 11th of March, 2020 by the World Health Organization (WHO) and it continues to spread with new variants emerging. The severity of the disease differs with some individuals being asymptomatic while some others develop **acute respiratory distress syndrome (ARDS).** The severity and mortality in COVID-19 patients has been linked to "cytokine storm" induced by the virus. Excessive production of pro-inflammatory cytokines leads to ARDS aggravation and widespread tissue damage resulting in multi-organ failure and death.

Cytokines are small glycoproteins, produced by several immune cells throughout the body, which upon release can promote a wide range of functions such as control of cell proliferation/differentiation processes, autocrine, paracrine and/or endocrine activity. They could also regulate immune and inflammatory responses. Some of the most widely studied cytokines include, interleukins (IL), interferons (IFNs), tumor necrosis factor (TNF), chemokines and colony-stimulating factors (CSFs) and several studies on SARS-CoV-2 have describe different cytokines, especially IL, IFNs and TNF in COVID-19 patients with severe cases.

Ragab *et al.,* 2020 reported that targeting cytokines during the management of COVID-19 patients could improve survival rates and reduce mortality, hence the need for drugs/medication that prevents cytokine formation and release in order to reduce COVD-19 associated deaths due to cytokine storm. Chow and colleagues (2021) offered a ray of hope with their research which shows that "Statins" reduced COVID19 severity and lower mortality. They describe the alleviation of hyperinflammatory phenomena following the administration of statins. Statins are drugs that are more widely known for their use in reducing blood cholesterol levels in patients with COVID19. High cholesterol levels in the tissues have been shown to promote SARS-CoV-2 endocytosis into the host cell, allowing infection establishment. Statins act by inhibiting the enzyme 3hydroxy3methylglutarylCoA (HMGCoA) reductase inside the cells.

The researchers carried out a literature search from January 2019 to December 2020 to identify studies that reported the association between statin usage and adverse outcomes, including mortality, ICU admissions, and mechanical ventilation. The studies were meta-analyzed for mortality by the subgroups of ICU status and statin usage before and after COVID-19 hospitalization.

The study concluded that patients administered statins after COVID-19 diagnosis or non-ICU admitted patients were at lower risk of mortality relative to non-statin users.

Reference: Chow, R. et al. (2021). [The protective association between statins use and adverse outcomes among COVID19 patients: a systematic review and meta-analysis.](#) *medRxiv* **preprint.**

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