

Vitamin D: Role in COVID-19

INTRODUCTION

The WHO proclaimed a term for the new coronavirus disease as COVID-19 on February 11, 2020, and in March 2020 declared COVID-19 as a pandemic,^[1] and enhancing immunity was considered as the prime trial toward protection from COVID. Immune enhancement focuses on the consumption of foods rich in proteins and antioxidants. Here, Vitamin D kindles more interest due to the linkage between the temperature and coronavirus survival. As there is no treatment for COVID so far, Vitamin D supplementation would be a choice of treatment to reduce mortality.

MECHANISM: VITAMIN D ACTION AGAINST COVID-19

The key functions of Vitamin D, apart from bone mineralization, are modulation of cell growth, modulation of genes, neuromuscular function, immune function, and reduction of inflammation.^[2] The coronavirus moves into the human cells through the angiotensin-converting enzyme 2, depressing its activity causing an imbalance in the renin-angiotensin system. This mounts up the cytokine levels causing acute respiratory distress as in case of pneumonia or coronavirus disease causing alveolar damage. The preclinical research illustrates that the specialism of Vitamin D in reducing inflammation and improving immune function projects a notable role in balancing renin-angiotensin system and thereby reducing lung damage.^[3] This mechanism is also augmented by various literature which states that low levels of Vitamin D are accompanied by acute respiratory distress and the risk of acute respiratory tract infections. Further, Vitamin D persuades the production of cathelicidins and defensins, the antimicrobial proteins, responsible for lung immunity. The replication of virus is lowered by these peptides, thus plummeting the levels of pro-inflammatory cytokines, as well as increasing the levels of anti-inflammatory cytokines.^[4] With this mechanism of action as a base, and also with the fact that the pandemic outbreak arose in winter season, a phase when the concentration of Vitamin D is lowest, and hypovitaminosis D is common, the role of Vitamin D in COVID can be substantiated. It is also justified by the reports, of the researchers from Trinity College, that the COVID-19 eruption is more severe above latitudes of 20° undergoing winter. 25-Hydroxyvitamin D level less than 12 ng/mL in adults and 9 ng/mL in infants indicates Vitamin D deficiency. Randomized controlled studies have shown that oral Vitamin D supplementation at doses up to 10,000 IU/day for short periods, followed by 5000 IU/day in case of hypovitaminosis D, ensures to raise the concentration of 25-hydroxyvitamin D above 40–60 ng/mL, which would be fruitful to fight COVID.^[5]

CONCLUSION

Even though many more clinical trials are vital to establish a robust liaison regarding the doses of Vitamin D required, to lessen the morbidity and mortality due to COVID, oral Vitamin D supplementation as a massive program by the governments would

improve the situation and prove productive, until a preventive or curative drug or vaccine is found exclusively for COVID.

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Conflicts of interest

There are no conflicts of interest.

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