Vitamin D and lumisterol emerge as cheap and easily accessible potential treatments for COVID-19

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Promising new data from a recent study indicates that active forms of vitamin D can inhibit the replication and expansion of COVID-19. The study's findings also suggest lumisterol, produced by a chemical reaction

in the body using light, works to block COVID-19. Vitamin D and lumisterol metabolites were able to block two specific enzymes (RdRP and Mrpo) required for the SARS-CoV-2 life cycle, according to the team of researchers from the University of Alabama at Birmingham; the Centre for Interdisciplinary Research in Basic Sciences in New Delhi, India; and the University of Western Australia. The study is published in the *American Journal of Physiology-Endocrinology and Metabolism* and has been chosen as an APSselect article for September.

Anthony Fauci, MD, director of the National Institute of Allergy and Infectious Diseases, suggested in September 2020 that vitamin D could help fight COVID-19. He also estimated that 40% of the U.S. population is vitamin D deficient. Scientists in this new study were able to prove that novel and physiologically relevant vitamin D and lumisterol derivatives "act on multiple targets, suggesting that they may be effective against original and mutant strains of SARS-CoV-2." Other benefits of vitamin D cited by researchers include its low cost and easy access. Andrzej T. Slominski, MD, Ph.D., a senior author of the study, described lumisterol as a natural product.

Once vitamin D is consumed, it is metabolized into various active forms by enzymes called cytochrome oxidases or CYP enzymes. Researchers on this study say their findings help explain a possible mechanism for why low vitamin D levels seem to promote COVID-19 infection and poor outcome in certain individuals. This correlates to other studies showing a relationship between vitamin D deficiency and poor disease outcomes. More studies and clinical trials are planned to test the efficacy of vitamin D and lumisterol as an antiviral therapeutic for COVID-19 in animals and humans.

More information: Shariq Qayyum et al, Vitamin D and lumisterol novel metabolites can inhibit SARS-CoV-2 replication machinery

enzymes, *American Journal of Physiology-Endocrinology and Metabolism* (2021). DOI: 10.1152/ajpendo.00174.2021