

## Quercetin and Vitamin C

Frontiers in Immunology, 19 June, 2020, [Quercetin and Vitamin C: An Experimental, Synergistic Therapy for the Prevention and Treatment of SARS-CoV-2 Related Disease \(COVID-19\)](#)

Here's a [background article](#) on quercetin's zinc ionophoric activity.

## Vitamin D3

This is a very large retrospective study (365,000 patients) over 9+ years: [Vitamin D Status and Risk of All-Cause and Cause-Specific Mortality in a Large Cohort: Results From the UK Biobank.](#)

With this study in mind, here is a wide ranging article on Vitamin D – [Immunologic Effects of Vitamin D on Human Health and Disease](#). One of the most interesting topics in this long article was the discussion of Vitamin D's effect on endothelial function and vascular permeability. Here the authors point out that Vitamin D exhibits both direct and indirect modulatory effects, the latter by upregulating the transcription of certain genes that upregulate endothelial nitric oxide.

## N-Acetylcysteine (NAC)

Here's a [video excerpt](#) from the on-line CME course I took. The instructor discusses the biochemical pathways that can lead to oxidative stress and how direct NAC (a precursor to Glutathion) acts to ameliorate oxidative stress. This video is valuable in that the instructor reviews a couple of very interesting articles about the applicability of NAC to COVID-19.

This article appeared in in Circulation about 3 years ago, "[Potent Thrombolytic Effect of N-Acetylcysteine on Arterial Thrombi](#)". Of course, COVID-19 was not an issue then but given COVID-19's pathogenesis, NAC appears relevant.

Finally, I found these two articles very informative not having a clinical background. I include them only because they really helped me understand the issues more deeply.

["Pulmonary Vascular Endothelialitis, Thrombosis, and Angiogenesis in COVID-19"](#)

["Endotheliopathy in COVID-19-associated coagulopathy: evidence from a single-centre, cross-sectional study."](#)

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