POTENTIAL MECHANISMS OF ACTION OF VITAMIN D AFFECTING SARS-COV-2

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INTRODUCTION
Since the outbreak of the pandemic, vit D has been in focus as a potential molecule for prevention and treatment of COVID-19.

OBJECTIVES
➢ present the potential mechanisms of action of vit D that were reported as potentially beneficial against SARS-CoV-2
➢ identify ongoing clinical trials regarding COVID-19 and vit D

METHOD/DESIGN
➢ PubMed and Google Scholar (2020 and 2021)
➢ ClinicalTrials.gov: “COVID-19” and “vitamin D” (October 13, 2021)

RESULTS
Vit D I cathelicidin and β-defensin 2 (antimicrobial and antiviral peptides)
Vit D I IL-6, IL-8, IL-12, TNF, INF-γ and IL-17

➢ COVID-19 infection down-regulates ACE2, which in turn could lead to excessive accumulation of angiotensin II
➢ vit D induces expression of ACE2 in the lungs in experimental animals in specific experimental conditions. ACE2 thus expressed more as a consequence of vit D supplementation might reduce lung injury
➢ although vit D increases the expression of ACE2, which indeed promotes the binding of the virus, it prevents pulmonary vasoconstriction response in COVID-19 cases
➢ ACE2 has potentially contradictory roles. On one hand, greater expression of it would be assumed as a potential risk since it is the receptor for SARS-CoV-2, but on the other, it has an important protecting role against acute lung injury and ARDS in experimental models

CONCLUSION
As the exact molecular mechanisms are being clarified, new clinical trials are designed in order to confirm the link between vit D deficiency and COVID-19 severity and the potential benefits of vit D administration for prevention and treatment of COVID-19.

110 clinical trials regarding vit D and COVID-19 were registered in the ClinicalTrials.gov registry

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