

# Role of Folate, Cobalamin, and Probiotics in COVID-19 Disease Management [Letter]

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## Dear editor

Recently, a review titled, “COVID-19: Vaccine Delivery System, Drug Repurposing and Application of Molecular Modeling Approach”<sup>1</sup> was published by Abd El Hadi et al in the prestigious journal Drug Design, Development and Therapy. We would like to acknowledge the remarkable work done by the authors and congratulate them on a successful publication.

The review discussed the origin, transmission, epidemiology, and possible treatment methods for Covid-19, which require further observation in pre-clinical and clinical trials. The strategies for therapeutics included drug repurposing of various drugs, such as polymerase inhibitors, protease inhibitors, interferons, and statins. Moreover, nutritional interventions for managing the disease were also among the suggestions.<sup>1</sup> However, we feel that the review has certain lackings in the nutritional interventions section. As such, we would like to make some contributions.

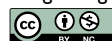
In the nutritional intervention segment, the authors mentioned various nutrients and minerals, such as vitamins A, vitamin B2, B3, vitamin C, vitamin D, zinc, selenium, and pyrithione, that have shown significant results in the management of the disease.<sup>1</sup> Nevertheless, the use of vitamins B9, B12 probiotics, and magnesium, which have also exhibited a positive impact on the prognosis of the infection, was not highlighted.

Multiple studies have shown that folic acid inhibits the binding of the SARS-CoV-2 spike proteins, which blocks the entry of the virus into the cell. One study suggested that vitamin B9 acted as an inhibitor of the furin enzyme, and thus prevented the virus from entering the cell, and another preprint reported that the derivatives of Folic acid, especially 5-methyl tetrahydrofolic acid and tetrahydrofolic acid, have a strong binding affinity against the SARS-CoV-2.<sup>2,3</sup>

Furthermore, the use of probiotics interferes with ACE2, which is the chief host cell receptor. Hence, it prevents the entry of the virus into the cell. Probiotics also repress cytokines and at the same time increase innate immunity. This inhibition of cytokines by probiotics may play a vital role in preventing acute respiratory distress syndrome (ARDS).<sup>4</sup>

Vitamin B12 in combination with magnesium and vitamin D has also shown promising results by decreasing the severity and the need for oxygen and intensive care.<sup>5</sup>

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It is evident from the aforementioned studies that there is a significant role of vitamins B9, B12, magnesium, and probiotics in managing the Covid-19 disease. Further trials should be conducted to enhance the power of these results.

## Disclosure

The authors report no conflicts of interest for this communication.

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