

Role of Probiotics and Colchicine in COVID-19 Management?

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Abstract: Background: Coronavirus disease 2019 (COVID-19) is a newly emerging human disease caused by a novel coronavirus, causing a global pandemic crisis. Probiotics and/or colchicine may be considered as options for treatment since they have anti-viral, anti-inflammatory, and immunomodulatory effects. The aim of the current review was to assess the effectiveness of probiotic supplements and colchicine on symptoms, duration, and progression of mild and moderate cases of COVID-19 infection. **Review:** A randomized, double-blind, placebo-controlled trial in the United States with 182 participants who were randomly assigned to receive daily oral probiotic (*Lactobacillus rhamnosus*) LGG or placebo for 28 days. The study indicated that LGG is well-tolerated and is associated with a delay in the onset of COVID-19 infection, a reduction in the incidence of symptoms, and alterations in the structure of the gut microbiome when administered as post-exposure prophylaxis within seven days of exposure. Colchicine may lessen mortality and the need for mechanical ventilation in mild-to-moderate COVID-19 patients, according to a systematic review and meta-analysis. **Conclusion:** Probiotics and/or colchicine may be viable treatment options for COVID-19 patients. To examine the efficacy of probiotics and colchicine in the treatment of COVID-19, it is necessary to conduct additional clinical trials and provide clinicians with evidence, as there are currently insufficient studies to support this conclusion.

Keywords: Probiotics, Colchicine, COVID-19, Management, Clinical trials, Review

How to cite this paper:

Hassan, S. O. A., Hassan, A. N. E.-D., Mohamed, M. S., Nesim, M. M., Al Ashram, M. N. B., & Allam, M. F. (2023). Role of Probiotics and Colchicine in COVID-19 Management? Probiotics, Colchicine and COVID-19. *Universal Journal of Gastroenterology and Hepatology*, 1(1), 14–16. Retrieved from <https://www.scipublications.com/journal/index.php/ujgh/article/view/772>

Academic Editor:

Wenxia Lu

Received: September 8, 2023

Revised: October 16, 2023

Accepted: October 28, 2023

Published: October 31, 2023



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1. Review

A novel coronavirus was discovered to be the source of a cluster of pneumonia cases in Wuhan (China), which led to an outbreak throughout China and then to a global pandemic. In February of 2020, the World Health Organization (WHO) officially recognized COVID-19 (coronavirus disease 2019) [1].

COVID-19 disease frequently manifests as a fever, dry cough, shortness of breath, and breathing difficulties. Some of the less frequent symptoms include anosmia, sore throat, runny nose, vomiting, and diarrhoea [2].

The aim of the current review was to assess the effectiveness of probiotic supplements and colchicine on symptoms, duration, and progression of mild and moderate cases of COVID-19 infection.

Early reports from Wuhan indicate that 2% to 10% of COVID-19 patients exhibited gastrointestinal symptoms, including diarrhoea, vomiting, and abdominal pain. 10% of patients experienced one to two days of nausea and diarrhoea prior to the onset of fever and respiratory symptoms [3].

The severity of COVID-19 disease was correlated with the diversity of the gut microbiota, and alterations in the gut microbiota persisted even after the virus eliminated, suggesting that the virus may have a long-lasting negative impact on the homeostasis of the human microbiome [4].

Infection with SARS-CoV-2 significantly altered the faecal microbiomes of all 15 patients, according to a study of confirmed COVID-19 patients in Hong Kong. This imbalance of intestinal microbiota persisted even after SARS-CoV-2 clearance [5].

Dysbiosis of the gut microbiome, immunological dysregulation, hyperinflammation, and a cytokine storm are hallmarks of COVID-19 illness [6]. Probiotics are defined as "live bacteria that provide health benefits to the host when given in sufficient doses" [7].

As an intestinal microbe regulator, probiotics help to improve the immune system, lessen allergic reactions, and play a crucial part in antiviral immunomodulation. They also increase the gastrointestinal microbiota's capacity to modulate immunological activity [8].

Wischmeyer *et al.* [9] conducted a randomized, double-blind, placebo-controlled trial in the United States with 182 participants who were randomly assigned to receive daily oral probiotic (*Lactobacillus rhamnosus*) LGG or placebo for 28 days. The study indicated that LGG is well-tolerated and is associated with a delay in the onset of COVID-19 infection, a reduction in the incidence of symptoms, and alterations in the structure of the gut microbiome when administered as post-exposure prophylaxis within seven days of exposure.

Colchicine is an anti-inflammatory drug frequently prescribed for the treatment and prevention of crystals induced arthritis, such as gout, systemic auto-inflammatory illnesses such as Bechet's disease and familial Mediterranean fever [10].

Colchicine inhibits neutrophil activation and release of IL1, IL8, and superoxide, D. In addition to promotion of maturation of dendritic cells to act as antigen presenting cells, Colchicine inhibits vascular endothelial growth factor (VEGF) and endothelial proliferation [11].

One of the clinical trials called COLCORONA 2020 was directed by the Montreal Heart Institute and conducted in Brazil, Canada, Greece, South Africa, Spain, and the United States conducted by Tardif. *et al.* in 2021. The trial revealed that the effect of colchicine on clinical symptoms of COVID-19- community-treated individuals was not statistically significant difference between the colchicine group and controls [12].

Colchicine may lessen mortality and the need for mechanical ventilation in mild-to-moderate COVID-19 patients, according to a systematic review and meta-analysis conducted by *Siemieniuk et al.* in 2020 [13].

2. Conclusion

Probiotics and/or colchicine may be viable treatment options for COVID-19 patients. To examine the efficacy of probiotics and colchicine in the treatment of COVID-19, it is necessary to conduct additional clinical trials and provide clinicians with evidence, as there are currently insufficient studies to support this conclusion.

Further randomised controlled trials with a larger sample size could be conducted to confirm these results.

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