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Letter to the Editor

Letter in response to the article “Enhancing immunity in viral infections, with special emphasis on COVID-19: A review” (Jayawardena et al.)



Dear Editor

I have read with great interest the review by Jayawardena et al. about the usefulness and potential use of dietary supplements in COVID-19 patients to enhance their immune system [1]. From the beginning of the current COVID-19 pandemics many researchers focused their attention on the role of comorbidities in the evolution of such condition, including diabetes and malnourishment. More recently some studies are pointing out the potential role of gut microbiota in determining a better immune and respiratory function in such patients. Some authors, starting from previous studies on the close relationships between gut microbiota and lung function, express the idea of a possible positive modulation of respiratory function by probiotics/synbiotics supplementation [2].

This idea is not new, but interesting and supported by previous studies demonstrating the efficacy of probiotics in immunomodulation and infection prevention in humans and animal models, also supporting resident microbiota in vitamin synthesis, bile acid metabolism, glycosylation processes [3].

SARS-CoV-2 genome encodes for 27 proteins, including the capsid (S) and the envelope (N). The S protein binds an ACE-2 receptor that is widely expressed in several human tissues (including lungs and intestine) and can indirectly modulate the transport of nutrients in the intestine, reducing the bioavailability of vitamins and amino acids necessary for antibodies production and, in general, for immune regulation [4].

Based on available data for SARS-CoV-2 and on previous studies about the biomodulation exerted on immune system by gut microbiota, we know that probiotics are able to produce both antimicrobial (i.e., antibiotics) and some bioactive molecules, mainly SCFAs that have been demonstrated to be helpful to maintain intestinal microbial homeostasis and to modulate several functions in the organism, including immune balance. Furthermore, probiotics may interact directly with lung microbiota. The different response of the patients to the infection may depend on differences in composition of their microbiota and correcting its composition with probiotics may potentiate the response to therapy, reducing the needs of intensive care support [3]. In general, these results show that probiotics may be important and helpful supplements for the patients, also confirming the role of our microbiota to maintain a

healthy status, and eventually to recover it.

These data need to be more extensively confirmed before they can be adopted in regular protocols for those that face COVID-19, also evaluating the real impact of SARS-CoV-2 on gut microbiota, and also considering the possible role of the gut virobiota, that seems to have a specific role for the homeostasis of our gut microbiota, accounting for its single-person specificity [5]. In fact, although intestinal dysbiosis has been reported in some COVID-19 patients, the data are anecdotal and not easily accessible. Furthermore, interactions between SARS-CoV-2 and gut microbiota and with resident virobiota could influence the capability of this new Coronavirus to infect intestinal cells and to disseminate more easily thorough the body, so helping to explain how probiotics could have a protective effect against COVID-19.

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