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Letter to the Editor

## Response to the letter of L. Santacroce regarding article “Enhancing immunity in viral infections, with special emphasis on COVID-19: A review” (Jayawardena et al.)



Dear Sir,

We would like to express our gratitude for the opportunity to respond to the discussion letter by Dr. Santacroce and to clarify aspects of our opinion in relation to the accentuated concerns. We also appreciate Dr. Santacroce's keen interest, taking time to enrich the discussion of our article titled “Enhancing immunity in viral infections, with special emphasis on COVID-19: A review” [1]. The discussion letter has highlighted the mechanism of probiotics and gut microbiota in relation to the concept of gut-lung axis. We are in agreement with the discussed concept as there is enough evidence to indicate a link between gut microbiota and lung immunity [2].

Findings from previous studies on Severe Acute Respiratory Syndrome (SARS) have shown that coronaviruses demonstrate a tropism for the gastrointestinal tract [3]. Several recent studies have showed the presence of viral RNA in faces or anal/rectal swabs of Covid-19 patients, even after the clearance of the virus from the upper respiratory tract [4]. It is reported that the ACE2 receptors to which SARS-coronavirus (SARS-CoV) is attached for cellular entry, are highly expressed in enterocytes in the small intestine of mice, indicating that this place could be an underestimated site of SARS-CoV-2 infection [5].

A COVID-19 patient with multiple complications reported a favourable outcome after administration of probiotics, including *Lactobacillus acidophilus*, *Bifidobacterium* and *Saccharomyces boulardii*, along with vitamins & minerals [6]. Similarly, a 9 years old boy diagnosed with COVID 19 exhibited disappearance of mild diarrhoea symptoms when administered probiotics [6]. The usefulness of probiotics in the treatment and prevention of viral infections are clear, due to their proven immunomodulatory activity and ability to stimulate interferon production [6]. Therefore the gut–lung axis explains the possible relationship likely to occur between respiratory diseases and the gut microbiome [2]. An ongoing clinical trial (NCT04366180) on supplementing probiotics (*Lactobacillus Coryniformis* K8) for the prevention of COVID-19 in healthcare workers will enable us to further understand their therapeutic benefits.

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