



## Editorial

# Modulating susceptibility and severity of COVID-19: Role of immuno-nutrition

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## 1. Introduction

On December 12, 2019 a new coronavirus (SARS-CoV-2) emerged in Wuhan, China, triggering a pandemic of severe acute respiratory syndrome in humans (COVID-19).<sup>1</sup> Although, the pandemic has affected all the groups, severe pathology and mortality is disproportionately highest in the elderly, underrepresented minorities (blacks/African Americans and Latinos), and/or in those with underlying comorbidities.<sup>2</sup> Thus, the scientific community across the world is putting uni-directional efforts to develop therapy and prevention strategies from the available resources to defeat COVID-19. In this regards, these communities have unanimous view that immune-nutrition can play a pivotal role in improving immune responses against viral infections.

Initially, when the pandemic hit the world, it was difficult to identify the risk factors and etiology of COVID-19, further, making it difficult for the scientists for disease prevention. With the passage of time, it has been found that obesity represents a significant risk factor both for COVID-19 susceptibility and prognosis.<sup>3</sup> Around 13% of the world population is obese, therefore, immune-nutrition can be an effective prophylactic measure to lower the burden of COVID-19 disease.<sup>4</sup>

Inflammation plays a fundamental role in the pathogenesis and progression of COVID-19, ranging from common colds to fatal cases of pneumonia due to the cytokine release syndrome (CRS) that affected patients, determining the severe conditions.<sup>5</sup> Infectious diseases, like COVID-19, are characterized by an increased production of adiponectin.<sup>6</sup> It seems interesting the possibility to improve the action of adiponectin through diet intervention.<sup>7</sup> An optimal nutritional status guarantees the main modulating processes of inflammatory and oxidative stress, both connected to the immune system. A balanced diet, rich in some foods, is associated with anti-inflammatory and immunomodulatory compounds, including vitamins (C, D, and E) and minerals (zinc and selenium), and may influence human nutritional status.<sup>8</sup>

Prebiotic from fruits and vegetables is well-established to modulate the gut microbiota and numerous benefits have been reported in chronic inflammatory and metabolic conditions.<sup>9</sup> Moreover, increased dietary fiber consumption is linked to reduced mortality rates in respiratory-related diseases and improved lung function. Thus, plant-based diets, functional foods, and supplements present a promising strategy for protecting against respiratory infections.<sup>10</sup>

Therefore, it can be concluded that personalized immune-nutrition for obese patients should be the first therapeutic choice to reduce the risk of infections and the disease course in COVID-19 patient. Immuno-nutrition

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can decrease the risk of infections, reducing characteristic inflammation state. In addition, immune-nutrition would be fundamental to support the immune response and protein synthesis in severe phase of COVID-19.

### Conflicts of interest

None.

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