

## The Role of Vitamins and Minerals Supplementation on COVID-19 Prevention: Benefit or Risk?

Dear Editor,

In a scenario where there is a lot of uncertainty regarding SARS-CoV-2, vitamin and mineral supplementation have gained considerable attention due to the belief that they could prevent infection. However, the scientific evidence is tenuous with regard to their potential to prevent coronavirus disease-2019 (COVID-19), and reduce disease severity or mortality.

A recent investigation into the effects of micronutrient consumption on reducing the risk of respiratory tract infections and inflammation associated with SARS-Cov-2 complications.<sup>[1]</sup> showed inconclusive findings. Some evidences suggest that Vitamins D, C, and zinc are a good immune support. Vitamin D has a role in reducing the expression of pro-inflammatory cytokines and increasing anti-inflammatory cytokines by macrophages.<sup>[1,2]</sup> Some studies recommend vitamin D supplementation based on the fact that in winter when the outbreak started, vitamin D levels are at their lowest due to low exposure to sunshine.<sup>[2]</sup> However, this argument is not supported.<sup>[3]</sup> For example, Manaus, capital of the Amazonas State, Brazil, has one of the highest COVID-19 mortality rates in Brazil despite being near the Equator line, high sunshine, and adequate vitamin D levels. This reinforces the point that supplementation should not be recommended without good evidence to avoid the risk of over supplementation.

COVID-19's mortality rate is higher in older adults. A review investigating the potential immune-nutrition role to fight respiratory viruses and diseases in older adults highlight a lack of high-quality trials.<sup>[1,2]</sup> In addition, there are concerns about the amount of fake news on supplements, promoted by aggressive pharmaceutical industry marketing, which usually argue that multivitamins have many health benefits with no side effects. Hyper supplementation without appropriate health evaluation increases the risk of health problems. This risk is greater in older adults due to preexisting health conditions, such as kidney, hepatic and cardiovascular disease, that can be aggravated by the toxicity of hyper supplementation.

Studies have demonstrated that a diet low in fruits and vegetables is associated with the development of chronic diseases and some types of cancer.<sup>[4]</sup> Based on this evidence, international organizations such as WHO have recommended the consumption of fruits and vegetables as a strategy to promote health and prevent chronic diseases.

A healthy diet is usually cheaper than buying dietary supplements with more physical and mental health benefits. A diet based on a diversity of natural and minimally

processed foods and with less ultra-processed foods, usually rich in fat, sugar, sodium, and low in fiber, vitamins, and minerals, will be enough to reach international recommended vitamins and minerals intake.<sup>[5]</sup> More importantly, self-administration of multi-vitamins without a physician or nutritionist/dietitian evaluation, particularly in older adults, should be avoided.

Finally, we recommend carefulness, mainly to older adults. Maintaining a healthy diet based on a diversity of food groups and guided by Dietary Guidelines developed by the health authorities of each country, and exposing yourself to the sunshine at home may be sufficient for most people. Try to include five a day portions of fruit and vegetables<sup>[5]</sup> and avoid ultra-processed foods and. Also, the control of fake news regards this issue is needed.

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### Conflicts of interest

There are no conflicts of interest.

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