

amounts of antioxidants to maintain the immune system during the current severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)/coronavirus disease 2019 (COVID-19) pandemic. Viral infections are characterized by high oxidative stress and an appropriate intake of antioxidants would help to fight against the virus. The authors suggested that lifestyle factors could influence the impact of the disease.

With reference to the findings reported in the article, we would like to make the following contribution to the discussion. The review analyzes in depth the potential beneficial effects of a healthy diet, including a Mediterranean Diet, on viral infection. In recent articles we also supported the idea that a healthy lifestyle could contribute to a higher immune response to the virus and would therefore be beneficial in the fight against the pandemic (2, 3). It has been suggested that there would be a synergy among the antioxidant-rich foods that would foster favorable changes in inflammatory pathways (4). Humans do not consume 1 type of food but a wide variety of combinations of different foods forming a dietary pattern. Consequently, in analyzing eating habits it is mandatory to take the interactions between different foods and their components into consideration. Moreover, it is known that plant-derived phenolic compounds could differently influence the health of males and females (5). The recent COVID-19 pandemic strongly affected women owing to increased psychological distress leading to unhealthy lifestyles, and women were specifically more likely to develop food cravings (2, 6, 7). Food cravings are characterized by a high intake of fat- and sugar-rich foods and by a low intake of fruit and vegetables. In a previous article (2) we hypothesized that vitamin D prophylaxis can help reduce the severity of the disease caused by SARS-CoV-2, particularly in contexts where hypovitaminosis D is common, i.e., women currently living in Northern countries (8). Several factors may have contributed to the widespread infection in Italy, despite the strong adherence to the Mediterranean diet. Lifestyle and diet can influence our inflammatory response to the virus and therefore it is important that both are optimized. The review by Trujillo-Mayol et al. (1) emphasizes these aspects of prevention but does not emphasize the potential increased risk in women. Women's health is strongly influenced by lifestyle, which includes dietary pattern and nutritional status, physical activity, and socioeconomic stress. A healthy lifestyle is mandatory to prevent chronic diseases and to fight infections. Women are less likely to adopt a healthy lifestyle owing to the high social pressures that oblige women to play numerous roles in the family, in society, and at work, all of which are debilitating and time consuming (9, 10). We need educational programs and prevention measures specifically dedicated to women's health.

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## Comment on "Western Dietary Pattern Antioxidant Intakes and Oxidative Stress: Importance during the SARS-CoV-2/COVID-19 Pandemic"

Dear Editor:

In an article published in *Advances in Nutrition*, Trujillo-Mayol et al. (1) present their argument for increasing dietary antioxidant intake to improve coronavirus disease

2019 (COVID-19) outcomes. In it, they conclude: “Although evidence remains scarce, there is some indication that a healthy diet, along with supplemental antioxidant intake, is beneficial to COVID-19 patients.” Although there is strong consensus favoring diets high in vegetables, and it makes sense that people might have better outcomes from COVID-19 if well-nourished, this is a troubling statement. Without direct evidence, a more circumspect conclusion than “is beneficial” would have been more appropriate. Moreover, the authors do not include in the balance of their analysis the aggregate data on antioxidant supplementation, which include reports of harm, and which have led the NIH National Center for Complementary and Integrative Health to issue cautions such as “high-dose supplements of antioxidants may be linked to health risks in some cases” (2).

Statements that concern public health interventions should always be made scrupulously, even if they are consistent with the general consensus. This is particularly acute at a time when we are dealing with a pandemic that has much of the population quite scared, searching for ways to control their susceptibility to COVID-19 infection, and hence they may be more likely to feel betrayed when it is divulged that the theory about which they were excited did not represent hard science.

It should also be noted that the authors reference numerous narrative reviews as fact citations throughout the article. Fact references should be primary research, ideally, or meta-analysis, or at least systematic review. Narrative reviews may be cited for the conclusions of the authors when the inclusion of opinion is desired. But then the text should reflect this. Given the likelihood that the casual reader will not be checking the references, it is the responsibility of the authors, the reviewers, and the editors to take extreme care to properly reference and to call out the strength of the studies cited.

The credibility of science has been under attack for decades. We strongly defend the publication of theoretical arguments that can educate and spur research, but these should be clearly labeled as such. They should be described as potentially making for interesting further study, and

not serve as news during a terrifying pandemic as has happened with other COVID-related nutrition reporting (3–5). Derivative theory, presented as truth, or even as suggestive of possible effect, may only serve to diminish trust in science, and may cause harm to those whom we hope to help. Editorial and peer review should include assessment of use of proper citation. We applaud the desire to take action; however, doing so without recognizing the limitations of science increases the risk of introducing bias.

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