



## THE IMPORTANCE OF VITAMIN C AND D IN CARONAVIRUS

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### ABSTRACT

Some nutrients play key roles in maintaining the integrity and function of the immune system, presenting synergistic actions in steps determinant for the immune response. Among these elements, zinc and vitamins C and D stand out for having immunomodulatory functions and for playing roles in preserving physical tissue barriers. Considering the COVID-19 pandemic, nutrients that can optimize the immune system to prevent or lower the risk of severe progression and prognosis of this viral infection become relevant. Thus, the present review aims to provide a comprehensive overview of the roles of zinc and vitamins C and D in the immune response to viral infections, focusing on the synergistic action of these nutrients in the maintenance of physical tissue barriers, such as the skin and mucous membranes.

**Keywords:** Vitamins C and D, COVID-19 pandemic, Dietary supplementation membranes, natural immune.

### INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic highlights the importance of the use of essential nutrients, especially those with immunomodulatory effects that support an organism's natural immune defenses in the event of that or other viral infections (1–3).

Moreover, viral infections increase the demand for several micronutrients such as vitamin A, B, C, D, zinc, and selenium. Dietary supplementation of micronutrients with recognized roles in immune function can optimize the modulation of the body's immune response, reducing the risk of infections (19, 21–25). In this context, zinc and vitamins C and D are the micronutrients for which there is robust evidence of their immunomodulating activity, such that their deficiency, even if marginal, can compromise metabolism and, consequently, their action on the immune





system, a concept grounded by the triage theory<sup>1</sup> proposed by Ames (26) and the Law of the Minimum<sup>2</sup> proposed by Justus von Liebig in 1840 (10, 17, 24–30). Considering the importance of adequate levels of nutrients for immune system activity, this review article presents, in a narrative form, a review of the main medical-scientific findings for the relationship between zinc, vitamin C and vitamin D and viral infections, in particular those caused by SARS-CoV-2, demonstrating a confluence of mechanisms in various immune functions, with an emphasis on the integrity of physical tissue barriers composed of epithelial cells and intercellular functional complexes.

For people with ORVI or the flu, eating foods rich in vitamin C is one of the most common tips. But does this guide apply to coronaviruses as well? Unfortunately, no matter how much research is done by experts on the disease under this puzzle, its unknown aspects are emerging. That's why some vitamins really help the body and even reduce complications. It is important to remember that everyone should take vitamin complexes not on their own, but on the advice of a doctor. Vitamin B12 According to a study published by Indian scientists in August 2020, vitamin B12 is added to certain parts of the coronavirus to prevent it from multiplying and spreading throughout the body. This conclusion was reached as a result of computer simulations performed by the researchers.

Vitamin D. This "sunlight" vitamin helps to overcome not only metabolism, but also depression. According to a study published in May 2020, people with vitamin D deficiency are twice as likely to be infected with the coronavirus and the disease itself is more severe. noda absorbs. Accordingly, if these natural defenses are able to fight the virus in the body, a person will do well. Unfortunately, in the fall and winter, in the dark, people are prone to vitamin D deficiency. To keep your body healthy, you need to eat foods rich in vitamin D - fatty fish, mushroom liver, fatty milk and dairy products.

### **SHOULD I TAKE VITAMIN C?**

Of course, you should not give up products that contain this vitamin, which is good for the immune system. However, doctors do not recommend taking the vitamin itself, especially for patients who are already ill. Because too high a concentration can be dangerous for organs and tissues. Vitamin D is also a hormone that plays an important role in the human body. Lack of it can lead to many diseases and problems. Causes of vitamin D deficiency? Lack of sunlight and prolonged indoor use are one of the main causes of vitamin deficiency. Lack of nutritional balance, the body's need for macro and micronutrients, pregnancy and lactation, aging,





disruption of the intestinal microflora and a number of diseases also increase the body's need for vitamin D. Why do you need vitamin D? It is important to provide calcium in the blood, prevent rickets, and strengthen bones, teeth and nails. Prevents and reduces the occurrence of skin problems observed in psoriasis, dermatitis, eczema and other diseases. Dermatologists, on the other hand, recommend taking vitamin D as one of the most effective ways to fight skin diseases. The study found that 62% of patients with psoriasis were deficient in vitamin D.

### **IMMUNE SYSTEM:**

Vitamin D strengthens the immune system, reduces the risk of infectious diseases - ORVI, HIV (Acquired Immune Deficiency Virus, HIV), tuberculosis. It also prevents autoimmune diseases such as type 1 diabetes, rheumatoid arthritis, vitiligo and others, and is also a prophylaxis against coronavirus.

### **IMPROVES DIGESTION:**

Vitamin D is beneficial for the digestive process and psychoemotional state. Depression, fatigue, and aggression can all be signs of this vitamin deficiency. When the body feels the need for a "sunny mood", there are problems with digestion. The need for "solar vitamin" is especially high in the autumn and winter, when the temperature begins to cool.

### **EFFECTS ON THE CENTRAL NERVOUS SYSTEM:**

There is also a link between vitamin D and MNS. When it is low, it can lead to cognitive impairment, dementia, and Alzheimer's disease. The use of vitamin D in prophylaxis in the elderly with changes in movement and coordination is also beneficial.

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