Review Article

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Role of Proteins and Water Soluble Vitamins as Immunity Booster during COVID-19 Pandemic-Review

Seema Saxena*

HOD, Department of Zoology, S.S. Jain Subodh Girls P. G. College, Sanganer, Jaipur, Rajasthan, India

*Address for Correspondence: Dr. Seema Saxena, HOD, Department of Zoology, S.S Jain Subodh Girls P. G. College, Sanganer-302029, Jaipur, Rajasthan, India E-mail: rajivsaxena07@rediffmail.com

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ABSTRACT

The rapid outbreak of the COVID-19 pandemic is a public health problem and this disrupts the work of daily life. Notwithstanding its attack, treatment based on limited evidence is currently available for this disease. There is no specific pharmacological antiviral therapeutic option available for COVID-19 management. Trials are in practice. However, the role of nutrition in immunity has received increased attention. Immunity is a function of our genes, diet, lifestyle and habits. A lot of interest has been given to the effect of essential nutrients such as protein and vitamins on specific aspects of immune function. Proteins and vitamins play an essential physiological role in promoting Immunity. Deficiency of proteins can lead to decreasing number of immune cells, the inability of the body to make antibodies (as antibodies are made up of proteins) and other immune-related problems. Vitamins and supplements might help to strengthen our immune system. Water-soluble vitamins B and C help boost power in the immune system and fighting the illness, especially Corona in the same way, as they can help us to get over a cold and flu. The deficiency of proteins and water-soluble vitamins can cause detrimental effects to the COVID-19 patients. During this pandemic, it is suggested that balanced nutrition can improve the immune system and a greater limit of lung damage from covid-19 and other lung diseases. The present article aims to highlight the immune-boosting effect of proteins and vitamin-B and C.

Key-words: Antibody, COVID-19, Immunity Booster, Immune cells, Supplements

INTRODUCTION

Only when the people themselves have a responsibility to take care of their health and that of their community, can significant changes occur. Community's wellness depends on the involvement of every person. Health care is everyone's right and responsibility. People must be provided with the clear, simple concept based information so that they can protect themselves and manage the most common health problems in their homes, instantly, cheaper and often better ^[1]. For this to occur responsibility and knowledge should be shared by everyone.

Immune boosting is a current, relevant topic during the COVID-19 pandemic. A strong and complete immune system is of prime importance for everyone.

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Access this article online https://iijls.com/ The immune system is a multidimensional and complex network of specialized cells, tissue, organs, proteins and chemicals, which protect the body against infections. The physiology of the immune system is concerned with sufficient intake of nutritious diet and trace elements^[2]. A healthy diet includes a balanced diet, healthy nutrition (proteins, carbohydrates, fat, vitamins mineral, and water) is responsible for the proper function of the immune system. A sufficient amount of proteins, vitamins and trace elements play an important role to influence and strengthen the immune system ^[3,4]. It has been established that balanced nutrition plays a vital role in maintaining the homeostasis mechanism. Any deficiency in nutrition whether, it is micro- or macronutrients, especially protein malnutrition and vitamins deficiency impairs the immunity of a particular person ^[5]. A person can be protected from viral Infections by consuming a well-balanced diet ^[6,7]. Good food is needed. Many common illness are caused by not eating a sufficient amount of food according to the requirement of the body. An adequate amount of micronutrients are essential to ensure the proper functioning of immune cell ^[8,9].

No one eats magic to fight disease-causing germs, but certain nutrients lead to help, protecting our body from millions of bacteria, viruses, fungi, protozoans, parasites ^[10,11] and cancer cells and chemicals.

It has been studied that proteins accelerate immune response against targeted pathogens and vitamins and supplements can help fill gaps in the diet, but the best way to load the essential nutrients is to get them directly from the diet. A good proportion of water in the body can enhance our immune system ^[12]. Water helps our body to produce lymph, which carries white blood corpuscles and other immune system cells to the site of infection.

Proteins as an immunity booster- One of the crucial ways to protect a person from a viral infection is to maintain a balanced diet [13]. A moderate amount of protein-rich food should be included in the daily diet [14]. A high rate of morbidity and mortality occurs due to infectious disease, COVID-19. The high rate of mortality and morbidity caused by protein-energy malnutrition that occurs due to insufficient food intake has been attributed to an increased rate of infections and delayed recovery ^[15-19]. Studies show that deficiency in proteins can significantly decreases immune function and increases susceptibility to infectious diseases. The immune system performs a good interaction between cells and proteins that work together to protect against diseases. Insufficient intake of proteins can leads to a weakened immune systems, weakened immune function and slow improvement from diseases.

Dietary protein is essential for maintaining a healthy immune system. It helps in soon recovery, repairing of old and worn out damaged cells, forms antibodies (antibody is a protein produced by the immunity system, it detects harmful external antigen such as bacteria, viruses, parasites and chemicals) and boost immunity. Protein malnutrition impairs the immunity of a particular person ^[20].

Proteins are bodybuilding, structural food. They are necessary for proper growth for making healthy muscles and brain. They protect and help the body against diseases. Adequate intake of dietary protein is essential for protection against viral infections. Proteins are the backbone of the body defence system, antibodies, enzymes and hormones. Antibodies that helps fight diseases are actively made up of proteins. Protein is an important source of immunosuppression enhancement because it form cells that use the immune system. Proteins are made up of amino acids that play a role in forging immunity. The Amino acid, found in proteins form the building blocks of all the body cells, including the immune cells that power the immune system ^[21]. These immune cells are lymphocytes, cytokines, phagocytes, which are necessary for normal immune functions and protect us from infections. If we do not consume enough food, fewer WBCs will be produced to combat antigens.

Protein deficiency therefore reduces the number of immune cells and level of immune responses in the human body in particular.

Vitamin B & C as immunity booster- Vital amines and minerals are essential for the development, maintenance and functions of the host immune system ^[22,23]. There are a total of six vitamins. Of these six vitamins, vitamin B and C are soluble in water and A, D, E and K is fat-soluble vitamins. Since Vitamin B and C are not stored in the body and constantly excreted in the urine, it is, therefore, important to use food that contains the required amount of these vitamins.

Micronutrients, like vitamins, have physiological effects on many biological responses including immunity and therefore vitamins deficiency leads to an increased risk of developing diseases, allergic reactions and infections [24,25]

Nsn12

Nsp9

Vitamin B- Since vitamin B is manufactured in plants, yeast and bacteria but not in mammals, mammals must get vitamin B from food or bacterial sources such as the intestinal microbiota ^[26]. Group- B vitamins are eight (8) water-soluble vitamins, essential for various metabolic processes ^[27] (Table 1).

Out of the above eight vitamins, vitamin B-6 is important for completing biochemical reactions in the immune system ^[28]. It is the in-charge of maintaining a healthy immune system. It makes new red blood cells and carries oxygen throughout the body. Vitamin-B6 deficiencies can cause many changes and reduce the antibodies required to prevent infections. Vitamin B6 is needed for the production of white blood cells and T-cells, which controls the immune response, helping the body to make the protein Interleukin-2, regulating the activities of white blood cells ^[29].

Table 1: Group-B Vitamins and their functions

Name of vitamin	Chemically named	Functions
Vitamin-B1	Thiamine	Help to convert glucose into energy and contribute to the function of the nervous system.
Vitamin-B2	Riboflavin	It is mainly involved in the production of energy and helps in the vision and health of the skin.
Vitamin-B3	Niacin	The body needs to convert carbohydrates, fats and alcohol into energy. It Maintains skin health and supports the nervous system and digestion. It is involved in cellular signalling, metabolism and DNA synthesis.
Vitamin-B5	Pantothenic acid	It is involved in energy production. It Produces RBCs and steroid hormones.
Vitamin-B6	Pyridoxine Ort7b 7Cl3 Ort8 Ort7a	It is essential for protein and carbohydrates metabolism, RBC formation and brain hormones. It controls the function and development of the brain, function of immune and steroid hormones.
Vitamin-B7	Biotin	It is required for energy utilization, fat synthesis, amino acid metabolism and glycogen synthesis. It controls the expression of genes.
Vitamin-B9	Folate or Folic acid	It is involved in the construction of RBCs. It helps the development of the embryonic nervous system, DNA synthesis and cell division.
Vitamin-B12 Spike Protein GWB 210 Methyltransferase	Cobalamine Nsp10 Nsp16	Most well known of all the B-vitamins. It is vital for neurological functions, DNA production and RBCs development. Involved in cell division, works as a coenzyme in many complex reactions. It participates in the synthesis of porphyrins, an important component of hermediation.
	Section 2	

There is an evidence that folic acid (vitamin B-9) and cobalamin (vitamin B-12) play an important role in maintaining the steady balance and functioning of the immune system ^[30]. The deficiency of folic acid and cobalamine can dramatically alter the body's immune response by affecting nucleic acid production, protein synthesis, inhibiting the function of the immune cells and disrupting the metabolic processes ^[31].

Vitamin B-6 and B-12 explore their utility in reducing some types of cancer and heart diseases.

Vitamin-C (also known as ascorbate or Ascorbic acid)- In the 1920s, vitamin-C was first identified by the Nobel laureate Albert Szent-Gyorgyi (Biochemist) from Szeged University in Hungary, who described the importance of Vitamin C for the treatment and prevention of Scurvy that results from the deficiency of Vitamin C, also known as Ascorbic acid or Ascorbate ^[32]. Vitamin C is the largest

immune stimulant. Vitamin C is an essential nutrient that humans can not make.

The vitamin-C is a powerful antioxidant that helps the body fight against infections and maintains a strong immune system by maintaining healthy eating habits. Vitamin C improves our immune system by strengthening T- cell and helping to make more immune cells. It can shorten the common cold. It is an important micronutrient, a powerful antioxidant and a cofactor of the biosynthetic and gene regulating enzymes family. As a result of its genetic control effect, it enhances the rate of specialization and proliferation of B-cell and T- cell.

Vitamin-C enhances the antimicrobial and natural killer cell activities (inhibits fungi and viral replication), lymphocyte proliferation, chemotaxis and delayed reactions mediated by cellular responses. It plays important role in the functioning of the immune system and the development of antibodies against infectious agents, reducing the high risk and period of infectious diseases. It shortens the period of respiratory tract infection ^[33] including influenza, protection against cardiovascular diseases, hypertension and maintains skin health ^[34,35]. Vitamin-C supplementation appears to be able to prevent and treat respiratory and systematic infection ^[36]. It controls immune defence by supporting epithelial barrier function against pathogens. It concentrates in phagocyte cells, like neutrophils and can enhance chemotaxis, phagocytosis, and the production of active oxygen and ultimately kills microorganisms.

CONCLUSIONS

Many physiological, hereditary and environmental factors contribute to the emerging variability and variability of COVID-19 confirmed rates in various nations. In the current context of COVID-19, a healthy immune system and its ability to function effectively are important assets to anyone. The importance of a healthy diet remains vital in controlling the immune system. Vitamins and good nutrition have been known to contribute to the functioning of the immunity system, especially for viral infections. Dietary proteins and vitamins play an important role regarding immune health, support a healthy immune system, help to recover from diseases, repairing of tissue, build antibodies and boost immunity. B-group vitamins are essential for energy metabolism. Antibodies and immune system cells depend on proteins for proper functioning. No one can boost immunity instantly. Our immune system is constantly adapting and learning so that the body can fight against bacteria and viruses that change over time.

At last, it is hoped that in the future, clear, well established and abundant evidence to support the prevention and treatment of diseases such as corona and other future epidemics will be available through a recommended nutrition.

CONTRIBUTION OF AUTHORS

One author is only contributed in this article.

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RNA-dependent RNA Polymerase

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