A REVIEW ON DIETARY SUGGESTIONS DURING COVID-19

Abstract

The review focused on the plant based foods for enhancing the immunity of all age groups against COVID-19. The world Health Organization (WHO) declared the COVID-19 as global pandemic, while thousands of infections and deaths are reported daily. This review provides insights about the properties of bioactive ingredients of foods and herbs for the support of the human immune system. There are a lot of traditional food items which can increase the immunity with an additional benefit of some antiviral properties. Dietary supplementation with vitamins C and D, as well as various minerals like zinc and selenium, was highlighted as potentially beneficial for individuals with, or at risk of, respiratory viral infections or for those in whom nutrient deficiency is detected. By the use of food rich in vitamins like C, D and E and bioactive ingredients like Turmeric, Ginger, Cinnamon, Garlic, Neem, Amla and probiotic yoghurt and minerals like zinc and magnesium these foods may increase immunity to control of COVID-19. In conclusion the plant-based products play a vital role to improve the immunity against COVID-19.

Keywords: COVID-19, Dietary requirement, Immunity modifiers & Vitamins

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I. INTRODUCTION

Human body have both innate immunity and acquired immunity. This immunity will fight against the foreign organisms like bacteria, virus and other microbes and save us from getting sick. When our immune system fails to fight against foreign organisms then it leads to disease conditions. People with weak immune system will easily get attacked by Corona virus (COVID 19) infection.[2] World Health Organization (WHO) declared COVID 19 as pandemic as it has been spreading to most of the countries through the World.[1] The effect of COVID 19 is severe in children and old aged people, which may cause death.[2] COVID 19 is caused by SARS Cov 2. COVID 19 was first observed in December 2019. After infected with COVID 19 the flu like symptoms starts with in 5 to 6 days and in some cases it may takes up to 14 days and other symptoms like sore throat, cough, shortness of breath, fever, body pains are observed.[20] As the is no cure and no vaccine exist to this COVID 19 we have to concentrate on immune booster died. There are some foods which can boost the immune system capacity and helps to fight against virus. In order to keep our mucous membranes moist and low body temperature drink plenty of water.[2] In the following review there discussed about some immune booster diets and their use in the time of COVID 19 pandemic. There are some foods like Curcumin, Papaya, Mushrooms, Cereals, Sunflower seeds, Almonds etc., which are rich in Vitamins. Vitamins may act as anti-oxidants which relieve oxidative stress from Reactive Oxygen Species (ROS).[1]

II. VITAMIN C

Vitamin C can be used for improving immunity in all age groups including kids and elderly people. This immunity is majorly acquired by neutrophils.[1] Generally vitamin C is majorly found in fruits and vegetables like papaya, kiwi, guava, oranges, spinach, mushrooms, beetroots etc.[2] Since spirulina and curcumin are rich in some minerals and vitamin C it is suggested to be consumed by elderly people.[3] Vitamin C deficiency causes Scurvy. During infections the activation of phagocytes leads to release of oxidizing agents also known as reactive oxygen species(ROS) which deactivates or destroy the viruses and bacteria.[5] Many ROS cause damage to host cells which play major role in pathogenesis to infections.[4] As vitamin C is antioxidant in nature, during oxidative stress effect of vitamin C may become prominent.[4] It also helps the immune system to stimulate the formation of antibodies.

III. VITAMIN D

The skin or skin layers contain pre-vitamin D_3 (7-dehydrocholesterol) which is converted to vitamin D_3 (cholecalciferol) upon exposure to UVB radiation in sunlight then this vitamin D_3 and dietary D_3 and D_2 (ergocalciferol) in liver converted to 25-hydroxyvitamin D_3 (calcitriol) and then through kidney and other organs it is get converted to 1,25-Dihydroxyvitamin D_3 (calcitriol).[2] Vitamin D plays a powerful role as immunomodulator.[1] Immune cells like T and B lymphocytes, monocytes, macrophages express the vitamin D receptors and also found that these cells may convert 25-hydroxyvitamin D_3 to 1,25-Dihydroxyvitamin D_3.[6] Monocytes and macrophages in the respiratory endothelial cells also express vitamin D receptors which have potential role in protecting patients with viral infections to respiratory tract.[1] A rhinovirus infected epithelial cells of bronchi with exogenous vitamin D shows implement in Antiviral defence by

rhinovirus induced interferon stimulated genes.[7] Vitamin D supplementation improves the protective effects in patients with acute respiratory tract infections.[1] Fortified cereals and natural sunlight are some sources of vitamin D.

IV. VITAMIN E

In elderly people it was found that vitamin E is essential nutrient. It helps in maintaining immunity and overall health and can protect from various bacterial and viral infections as it is a powerful antioxidant.[2] In order to get the daily dose of vitamin E one should have to consume sunflower seeds. Soaked almond, peanut butter.[2] Lipoproteins and poly unsaturated fats in plasma membranes are protected by vitamin E majorly acts as radical peroxyl scavenger.[8] F_2 isoproston promote oxidative lipid destruction by producing free radical and b supplementation of vitamin E it was found that emission of free radicals decreased. Vitamin E supplementation raises tocopherol levels in plasma but have no effect on athletic muscle damage.[2]

V. VITAMIN A

It helps in regulating the immune system and provide protection against infection by proper maintenance of health of tissues. Generally, vitamin A is richly found in carrots, broccoli, red bell peppers, sweet potatoes.[9]

VI. ZINC AND MAGNESIUM

Due to presence of immunomodulatory effect to zinc it has a role in treatment of COVID-19. Combination of Zn^{2+} cations with Zn ionosphere pyrithione result in inhibition of SARS-Coronavirus RNA polymerase enzyme activity by reducing its replication. [10]

Magnesium is and electrolyte which helps in strengthening the lymphocytes and natural killer cells of our immune system. Magnesium acts as major source in generation of adenosine triphosphate (ATP) which is considered as energy to cells.[2] Whole grains, black beans, dark chocolate are some foods that are rich in magnesium.

VII. TURMERIC

Curcumin is a bioactive compound present in the turmeric acts as an anti-inflammatory agent.[11] Turmeric plus ginger acts as anti-inflammatory plus digestion. Turmeric plus mushroom acts as anti-inflammatory plus immunity. Turmeric plus ashwagandha acts as anti-inflammatory plus stress relief. Curcumin is being recognized and used worldwide in many different forms for multiple potential health benifits.[12] For example, in India turmeric containing curcumin has been used in curie. The anti-inflammatory and antioxidant properties of curcumin help as best benefits for COVID-19.

VIII. GINGER

The health promoting prospective of ginger are well known. It can treat a wide range of diseases via immune-nutrition and anti-inflammatory responses.[13] Gingerol is an important compound in ginger, gingerol acts as antiviral and anti-inflammatory.[14] In the time of these

COVID-19 pandemic consume ginger in the form of ginger water, ginger tea, lemon ginger will help a lot to people.

IX. CINNAMON

Cinnamon acts as strong immune booster because it has medical properties like antibacterial, antioxidants, anti-inflammatory and helps to reduce the infections and makes a strong Immunity.[15] In addition to its proven ability to regulate blood pressure, cinnamon may also protect the body against coronavirus. You can simply soak cinnamon stick in water overnight a drink it in the next day morning.[16] Consume it as in cinnamon tea, cinnamon water, smoothie and sprinkle it in a breakfast cereal.

X. GARLIC

Garlic boosts immune power and helps in reducing stress. Garlic is a functional food well known for its immune modulatory, anti-inflammatory, ant mutagenic, anti-tumor properties.[17] Garlic maybe an acceptable preventive measure against COVID 19 infection to boost immune system cells.

XI. NEEM

Neem boosts the immune system and also lowers the risk of cancer and cardiovascular diseases. Neem has properties like antibacterial and antiviral properties purifying and cleaning the blood of harmful toxins and boosts immune system.[18]

XII. YOGHURT

Probiotic in yoghurt useful to control the respiratory infections Probiotic in yoghurt will lessen the impact of respiratory infections caused by the corona virus.[19]

XIII. CONCLUSION

Exploring and analysing origins of immunity reveals evolutionary and developmental ties to diet and nutrition foods are capable of influencing immune system function. Now a day due to these COVID-19, the global pandemic the people with low immune system were affected a lot. The foods which contains the bioactive ingredients like Turmeric which contains the curcumin as a bioactive compound acts as antiviral and anti-inflammatory agent, infection the gingerol acts as antiviral and anti-inflammatory agent, Cinnamon acts as strong immune booster because it has medical properties like antibacterial, antioxidant and anti-inflammatory activities, Garlic acts as immune modulator, antimicrobial, anti-inflammatory, anti-tumor properties, Black pepper has piperine acts as antioxidant and anti-bacterial, Neem boosts the immune system, Amla increases the body's white blood cells. The probiotic (cohort) useful to control the respiratory problems and also various vitamins like C, D, E improve immunity. By the end we have to conclude that, the plant based foods play a vital role to enhance the immunity of people to control of COVID-19.

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