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IMMUNITY BOOSTERS DURING COVID-19

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ABSTRACT

Coronaviruses are certainly the most important group of familiar positive-sense RNA viruses consisting a extensive range of natural hosts. First, it is merit clearing up what "epidemic" means, According to WHO a epidemic is "the worldwide spread of a novel diseases". The countries are struggling with impending dangers that this virus poses to human kind; there are some key actions that individuals can acquire to battle this pandemic.

It is important to state sanitation standards like washing your hands repeatedly, particularly if you have travelled by municipal transport. Use an alcohol sterilizer, in case you are travelling to sanitize your hands, wear a mask to cover your nose and mouth, and prohibit touching your hand or mouth. There are also assured methods to advance your immunity which is dominant at this point in time.

In this article, we have discussed about the immunity boosters that help us to prevent from virus and built our immune system strong. Individuals in sure pre-existing diseases like diabetes, hypertension, cardio vascular disease, and respiratory issues are at a elevated risk of having Covid-19 complications, it also worse with age as the common immunity decreases as you get mature. In the younger age group with no fundamental diseases, Covid-19 may outcome in a insignificant infection, considered you have a strong immunity and do not hold in actions like smoking or vaping to fight the attack of the virus. The immune reaction is vital to manage and get rid of CoV infections. We make available an up to date on CoV infections, mainly the role of the immunity boosters. The importance of immune reaction in coronavirus infection and progresses the thoughtful of the characteristics of

CoV-induced response. This article contains is a list of eatables you can undertake to improve your immunity and prevent yourself from virus attack.

Keywords: Immunity Booster, factors that may impair the immune system, Treatments .

I.INTRODUCTION

COVID-19

The novel corona virus (COVID-19) or else the severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) as it is nowadays called, is fast spreading from its source in Wuhan City of Hubei region of China in December 2019 to the rest of the world[1].According to WHO report, around 24,71,136 confirmed cases of corona virus disease 2019 (COVID-19) and 1,69,006 deaths have been reported in the world and recovered cases are around 7,17,819. India has reported 19,984 cases and 640 deaths, and recovered cases are 4,370 till 22 April 2020. [2,3].

IMMUNITY BOOSTERS

Human body has an adequate biological defence (Immunity) to fight against infection and diseases. However, sometimes this property is lost in certain cases and the individual is susceptible of developing infections and diseases [4]. There are some plants in nature which are capable of boosting our immunity and help us in fighting against infections and diseases [5], these plants are called as “Immunity booster plants”. These plants enhance our immune system by activation and repression of immune specialized cells, interfering in numerous pathways that most important in the direction of enhancement in immune responses and defense system. Immunity booster plants work wonders in managing our health by augmenting our immune system and thus preventing many aliments in an effective, inexpensive and convenient way. [6]

OBJECTIVES

The objectives of this dissertation are to explore the ways to control epidemics and preventing outbreaks of Coronavirus. The specific objectives are:

1. To assess the knowledge of coronavirus among the people.
2. Discussing about the Immunity boosters during Covid-19.
3.To inform the people about the coronavirus preventing strategies, and treatment of coronavirus.
4. Discuss how Immunity boosters act during Covid-19.
5. Provide an integrated, synthesized overview of the current state of the Coronavirus.
6. Discuss how Immunity boosters help to boost our immunity during Covid-19.

II. HISTORY OF CORONA VIRUS

The SARS-CoV-2 is a β-coronavirus, which is wrapped non-segmented positive-sense RNA virus (Subgenus sarbecovirus, Orthocoronavirinae subfamily). [7]. A worldwide agency named as The International Committee on Taxonomy of Viruses (ICTV) classified the Coronavirus into four categories named as α, β, γ, and δ. α- and β-Coronavirus are able to infect mammals, while γ- and δ-Coronavirus tend to infect birds. In the past,six Coronavirus have been recognized as human-susceptible virus, surrounded by which α-Coronavirus are HCoV-229E and HCoV-NL63, and β Coronavirus are HCoV-HKU1 and HCoV-OC43 with low pathogenicity, cause mild respiratory symptom like to a common cold, respectively. The further two known β-CoVs, SARS-CoV and MERS-CoV direct to severe and potentially serious respiratory tract infections.[8]. Virus Ranges from 60 nm to 140 nm in diameter with spike like projections on its surface giving it a crown like appearance under the electron microscope; hence the named as coronavirus [9].In this virus, its viral genome contains around 26,000 to 32,000 bases. Coronavirus are the largest known RNA viruses. Coronavirus can infect a variety of host species, including birds, humans and some other vertebrates. The incubation period of coronavirus from 2 to 14 days. [10]

II. ORIGIN OF COVID-19

In December 2019, adults in Wuhan, capital city of Hubei region and a enormous transportation hub of China ongoing present to local hospitals among severe pneumonia of unidentified grounds. Many of the initial cases had a common exposure to the Huanan wholesale seafood market that routinely sold live animals. The surveillance system (set up into place after the SARS outbreak) was activated and respiratory samples of patients were sent to reference labs for finding the cause. On December 31st 2019, China give the notice of the outbreak to the World Health Organization and on 1st January the Huanan sea food market was closed. [11].On 7th January, the virus was identified as a coronavirus .It was found that the genome sequence of SARS-CoV-2 is 96.2% identical to a bat Coronavirus, whereas it shares 79.5% identity to SARS-CoV.[12].

III. PREVALANCE OF CORONAVIRUS

According to Li-sheng Wang and its co-workers that the population is generally susceptible to coronavirus, the median age was 47 years, 87% case patients were from 30 to 79 years of age, and 3% were age from 80 years or older, and the number of female patients was 41.9%. the majority of cases were diagnosed in Hubei region, China (75%). 81% cases were classified as mild, 14% cases were severe, and 5% were critical. And, they suggest that the elderly male citizens are more susceptible to this coronavirus as compared with other groups.[13].In summary, COVID-19 rapidly spread from a single Wuhan city to the entire country in just 30 days. So that suggest measures should be taken to control the spread of the disease.

IV. SIGNS AND SYMPTOMS

The Chinese Center for Disease Control and Prevention published a report of approximately 72,314 cases in which it discovered that the severity of proven symptoms can differ from person to person.[14].The report contain information/data of both adult and paediatric patients being infected with COVID-19. Data collective from three large case cycle specify the subsequent outcome (15, 16); the greater part of adult patients present with fever (92.8%), cough (69.8%), dyspnoea (34.5%), myalgia (27.7%), headache (7.2%), diarrhea (6.1%), a sore throat (5.1%), and pharyngalgia (17.4%). In the paediatric population, symptoms may include fever, fatigue, cough, nasal congestion, runny nose, diarrhoea, and headache. In the most harsh situation, these younger patients can growth into respiratory failure insensitive to conventional oxygen therapy, septic shock, metabolic acidosis,and coagulation dysfunction .[17].

V. TRANSMISSION

Hard work have been made to investigate for a reservoir host or intermediate carriers from which the infection may have spread to humans. Initial reports recognized two genus of snakes that could be a likely reservoir of the COVID-19. However, to date, there has been no conformable evidence of coronavirus reservoirs other than mammals and birds.[18,19]. Genomic series study of COVID-19 showed 88% characteristics with two bat-derived severe acute respiratory syndromes (SARS)-like coronaviruses. [20],and representing that mammals are the mainly link between COVID-19 and humans. A number of reports have recommended that person-to-person spread is a possible path for spreading COVID-19 infection. This is supported through cases that occurred within families and between people who did not visit the wet animal marketplace in Wuhan. [21, 22].

VI. MECHANISM OF ACTION OF COVID-19

Person-to-person transmission occurs primarily through direct contact or droplets spread by coughing or sneezing from an infected person. The binding of a receptor articulated by host cells is the first step of viral infection followed by synthesis through the cell membrane. It is considered that the lung epithelial cells are the primary target of the virus. As a result,it has been reported that human-to-human transmissions of SARS-CoV occurs by the binding between the receptor-binding domain of virus spikes and the cellular receptor which has been identified as angiotensin- converting enzyme II (ACE II) receptor. Suggested that,the GB sequence of the receptor-binding domain of COVID-19 spikes is similar to that of SARS-CoV. This data strongly suggests that entry into the host cells is via the ACE II receptor. [23, 24].

VII. COVID-19 AND THE PREGNANT PATIENT

Weiyi Tan and co-workers suggest that pregnant women are not at increased risk when compared with general adult population, and they found that no evidence of transmission of the SARS-CoV-2 virus from mother to baby during birth or breastfeeding at present. All the women who gave birth with COVID-19 had cesarean sections, Consequently, at present there is no facts regarding vertical transmission for women who are infected earlier in the

pregnancy or who deliver vaginally. More studies are should be in process to examine the potential impact of COVID-19 on pregnancy. [25]

VIII. TREATMENT AND PREVENTIONS

Since at this time there are no approved treatments for corona virus infection, so prevention is most important. Initially,to ensure sufficient isolation to prevent transmission to other contacts, patients and healthcare workers.

- Mild infection should be manage at house through analysis with reference to danger sign and symptoms.
- Regular use of antibiotics and antivirals such as oseltamivir should be avoided in confirmed cases.
- The common and moral principles are maintaining hydration and nutrition via controlling fever and cough.
- In hypoxic patients, oxygen is given through nasal prongs, face mask, high flow nasal cannula (HFNC) is indicated.
- Mechanical ventilation and even additional corporeal membrane oxygen support may be given to the patient.
- In some cases, renal replacement treatment may be needed.
- Antibiotics and Antifungal are given if co-infections are proven. [26, 27].
- Other drugs used for therapy are arbidol (an antiviral drug existing in Russia and China), intravenous immunoglobulin, interferons, chloroquine and plasma of patients improved from COVID-19. [28, 29, 30].
- The ventilation at residence should be good quality with appropriate sunlight to permit for devastation of virus.
- Isolation of confirmed or assumed cases with mild sickness at home is recommended.
- Patients should be placed in separate rooms, and wear suitable masks.
- The rooms surfaces and apparatus should undergo regular decontamination if possible with sodium hypochlorite solution.
- Patients having respiratory symptoms should be asked to use surgical masks.
- Patients can be discharged from isolation once they are afebrile for as a minimum 3 day and have two repeated negative molecular tests at 1 day sampling interval.
- Healthcare workers should be provide with fit experienced N95 respirators and shielding suits and safety glasses.
- Healthcare workers should be asked to wear a surgical mask when in the same room as patient and use hand hygiene every 15–20 min.
- The use of mask by healthy people in community places has not exposed to defend against respiratory viral infections and is currently not suggested by WHO.
- People should be asked to keep away from crowded areas.
- They should be asked to practice cough hygiene by coughing either in sleeve or tissue.
- Practice hand hygiene frequently every 15–20 min.

- Non-essential international travel should be avoided at this moment.

Some properties of this virus make prevention complicated namely, non-specific features of the disease, the infection yet before onset of symptoms in the incubation time, spread from asymptomatic citizens, extensive incubation period, tropism for mucosal surfaces for example the conjunctiva, extended duration of the illness and transmission even subsequent to clinical recovery.[31,32]

IX. IMMUNITY BOOSTERS DURING COVID-19

For improving the immune system of a body, we should take dietary supplements. The "immune boosters" promote includes vitamins, minerals, antioxidants, probiotics, and "functional foods" as well as other balancing and substitute medicine approach [42].

Those plants which are rich in flavonoids, vitamin C, or the carotenoids can enhance immune function of our body. The flavonoid-containing herbs may also possess mild anti-inflammatory action. Their useful effect named as anti-inflammatory and as an immune-stimulant property. It can increase the activity of lymphocytes, phagocytosis, and induce interferon production in our body. [33]

1. GARLIC

Botanical name: Allium sativum

Family: Amaryllidaceae

Common name: Garlic

Chemical constituents: Allicin, joene, thiosulfinate, alliin, ajoene, diallylpolysulfides, vinyldithiins, Sallylcysteine, saponin, flavonoids.

Garlic is one of the mostly used plants that can effect strongly on immune system. Garlic is an immune system booster. It has been found to exert an immune-stimulating effect by stimulating natural killer cell activity. For example,various studies propose that garlic is a capable candidate as an immune modifier, which conserve the homeostasis of immune functions since it contains higher concentration of sulfur combinations which are responsible for its therapeutic effects. The chemical constituents of garlic have also been found for treatment of cancer, diabetes, atherosclerosis and Hyperlipidemia.[34,35,36]

2. ORANGE

Botanical name: Citrus sinensis

Family: Rutaceae

Common name: Orange

Chemical constituents: Vitamin C and beta carotene.

It is a citrus fruit which are capable of boosting our immunity and help us in fighting against infections and diseases, these plants are called as “immunity booster plants”. These plants boost up our immune system through activation and inhibition of immune specific cells, interfering in numerous ways that finally leading to enhancement in immune responses and defense system. Citrus fruits boosts our immunity because these fruits contains high content of Vitamin C and having antioxidant properties. [5,6]

3. BELL PEPPERS

Botanical name: Capsicum annum

Family: Solanaceae

Common name: Sweet pepper

Chemical constituents:- Carotenoid (Lycopene), Vitamins A,C,B,E and K, carotenoid antioxidants, alpha and beta carotene, zeaxanthin antioxidants and vitamin C, para-coumaric acid.

Bell pepper boosts our immunity because these contains Vitamin C, carotenoids (alpha and beta carotenoids) and having some antioxidant peoperties. It contains rich content of Vitamin C.It is used as an Anticancerous, boosts immune system and keeps skin youthful, anti-inflammatory,relief from pain and, helps renew cells.

4. TULSI

Botanical name: Ocimum sanctum

Family: Lamiaceae

Common name: Tulsi

Chemical constituents: Ursolic acid, apigenin and luteolin

Tulsi enhance our immune system, because it has some immunomodulatory effects. And it contains apigenin, urosolic acid which also used as an anabolic, hypoglycemic, muscle relaxant, antibacterial, antifungal, antiviral properties, anti-allergic and promote longevity. It is a natural plant which boosts our immunity.It also cures allergy and asthma.

5. PIPLI

Botanical name: Piper longum

Family: Piperaceae

Common name: Long pepper

Chemical constituents:-The chemical constituents of long pepper are Piperine, rutin, beta-caryophyllenepiperyline, piperoleines, piperamine, chavicin, pinene, phellandrene, pentadecane, beta-bisabolene, linalool and limonene.

It is used in the treatment of flatulence, gout, laryngitis, paralysis, abdominal tumors, enlarged spleen, bronchities, cold, gastric ulcers, improves the digestive system, enhances the immunity system. Long pepper enhances the immune system of our body because it contains linalool and limone, piperoleines, piperamines. And, by improving digestion, Pipli enhances our immune system.

6.GINSENG:-

Botanical name: Panax ginseng

Family: Araliaceae

Common name: Korean Ginseng

Chemical constituents: Ginsenoides, Gginsenosides, Ggintonin.

It also helps in boosting our immune system. It also improves fatigue syndrome, heals bronchial disorder, chronic fatigue and lowering the blood sugar level and cholesterol level in our body. Ginseng contains ginsenosides, Gginsenosides which promotes the production of cytokines which stimulate both Th 1 and Th 2 immune responses. The part of plant used is leaves and Roots.[36]

7.AMLA

Botanical name: Phyllanthus emblica Linn. (Synonym-Emblica officinalis)

Family: Euphorbiaceae

Common name: Indian gooseberry or Amla [37]

Chemical constituent: Tannins, Alkaloids, Phenolic compounds, Amino acids, Carbohydrates, Vitamin C, Flavonoid, Ellagic acid, Chebulinic acid, Quercetin, Chebulagic acid, Emblicanin A, Gallic acid, Emblicanin B, P`unigluconin, Pedunculagin, Citric acid, Ellagitannin, Trigallayl glucose, Pectin.[38]

How Amla enhances the Immunity in our body:-

Grover HS and coworkers suggest that Amla works as an energy-promoting, disease-preventing tonic may be its effect on the immune system. Amla is the rich source of Vitamin C or ascorbic acid, and these are the essential ingredient that helps in the absorption of Iron. Hence, it improves absorption of iron for healthy blood. Vitamin C is helpful to increase the production of white blood cells. These are key to fight against infections. The regular use of Amla-Berry can improve digestion, absorption, and assimilation of food. It enhances all thirteen digestive fires (Agni). However, it works more slowly and gently than ginger or other digestion-enhancing herbs.[39].

X.LIFESTYLE BY WHICH WE CAN BOOST OUR IMMUNITY AGAINST COVID-19

Avoid alcohol intake

Alcohol is shown to suppress the immune system, it affect the brain in women over 40, and it also cause disturbance in sleep.

Sleep more

Sleep improves immune functioning in our body. Magnesium can counteract the stress/anxiety response, assist your muscle release and may yet recover your sleep.

Manage your stress level

Meditation has so many health benefits; it reduces the stress level in our body. Meditation has also been exposed to decrease blood pressure. Hence, it maintains your stress level.

Nutritious foods

Take the food which contains all necessary nutrients such as Vitamin A, C, and zinc. We get vitamin A from cod liver oil, carrots, spinach, broccoli, and grass-fed beef liver. And, We get vitamin C from citrus, kiwi, cauliflower, tomatoes, and green leafy vegetables. Eat more foods that are rich in zinc like oysters, seafood, animal protein, nuts, seeds, and legumes.[40].

Exercise

Regular exercise or physical activity helps to boost up immune system function through raising levels of infection-fighting white blood cells and antibodies, rising circulation, and falling in stress hormones. Exercise program do not only help prevent respiratory infections but also to improve cognitive and physical flexibility.[41].

XI. FACTORS THAT MAY IMPAIR THE IMMUNE SYSTEM

Researchers have exposed sure factor that might have an effect on the immune system, such as pitiable diet, never-ending strain, short of sleep, precise medical situation, and the make use of definite pharmacological agents such as corticosteroids and immunosuppressive agent used to cure autoimmune disorders, immune-mediated diseases, and transplant patients. [43]. Researchers are persistently exploring the effect of diet, work out, becoming old, psychosomatic stress, and other factors on the immune reaction in both animals and humans. [44]. Some research has confirmed that malnutrition with or without having dietary deficiency of zinc; selenium; iron; copper; vitamins A, C, E, and B6; and folic acid appreciably manipulate immune system reaction. [45].

XII. DIRECTIONS TO CONTROL THE SPREAD OF THE COVID-19

Y.H. Jin and coworkers states that wide-ranging procedures are necessary to decrease person-to-person spread of COVID-19 and to manage the existing outbreak. Unique consideration and hard work to guard or decrease spread should be applied in vulnerable populations together with kids, healthcare providers, and aged people. A instruction was available for the medical staff, healthcare providers, and, public health individuals and researchers who are operational on a regular basis in COVID-19.The near the beginning decease cases of COVID-19 occur principally in mature people, because the aged people have feeble immune system that offer quickly evolution of this viral infection. If the Immune system of a human being is well-built, than the human being have fewer probability to contaminate with COVID-19.Therefore, we should have well-built immune system and control to protection against diseases and infection. We should take enough immunity boosters to enhance our immune system.China and other countries including the US have implemented major prevention and control measures including travel screenings, and by giving more instructions regarding with prevention from COVID-19, lockdown to control further spread of the virus.

XIII. CONCLUSION

The outbreak of COVID-19 swept across China rapidly and has spread to many countries/territories/areas outside of China. Scientists have completed improvement in the categorization of the novel coronavirus and are working widely on the therapies and vaccines against the virus. But, still now there is no vaccine developed against corona virus. I have summarized the current knowledge of COVID-19 as follows firstly, the transmission, and mechanism of action of corona virus, how it enters in our body, and its prevention, affects on pregnant patients etc. I have also discussed many immunity boosters which helps in enhancing the immune function in our body, And how they act as immunity boosters. I have also discussed the role of vitamins, minerals, nutrients food in enhancing the immune

function. Because the early death cases of COVID-19 occurred primarily in elderly people, because the elderly people have weak immune system. Therefore, we should have strong immune system and defense power to fight against disease and infection.

Preferably, Intake a healthy and unbiased diet is the most favorable method for shaping and maintaining a well-built immune system. However, lots of patients choose to utilize dietary supplement to make sure that all their dietetic requirements are meet. Proceeding to recommend the make use of any of such supplement, pharmacists should monitor for potential contraindications and drug or nutrient contacts. Patients with medical situation or those who take other medication should be positive to converse the use of these supplement with their chief health care provider earlier than using them. While analysis patients about the a variety of goods marketed for the immune system, reminiscent patients who use these supplement to constantly adhere to recommended dose and to use goods only as intended for. Patients should also be caution about taking extra-large doses of vitamins and to constantly read label to verify for therapeutic duplication, which might lead to toxicities if they are taking other dietary supplement.

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