STUDY OF SOME VEGETABLES USEFUL IN THE CURRENT PANDEMIC : COVID-19

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ABSTRACT:
In the current Pandemic, more than 17 crores individuals affected world wide and above 30 Lac people died till the last day of May 2021. Such a type of pandemic is still not reported in the history of our earth. Recent data and investigations are in the favour of this pathogen as the name must be Wuhan Virus. Several scientific investigations clearly explained that such viruses cannot be of natural origin. Wuhan Virus is the real result of genetic engineering of the Chinese laboratories by which a simple influenza like virus became the deadly biological weapon. Today the entire globe is struggling with this pandemic. In this manuscript an attempt has been made to find out more effective vegetables, which will improve the Immunity and health of our population. This will be helpful as supportive therapy in the recovery of COVID patients and boost the Immunity as Preventive measure against the current Pandemic. Most vegetables are low in calories but high in vitamins, minerals fibers, coenzymes, cofactors and several important components of our biochemical reactions to improve the proper resistance from infection and infestations. However, some vegetables stand out from the rest with additional proven health benefits, such as the ability to fight against infections or reduce the risk of disease. In this article,14 vegetables have been recommended for your diet during current pandemic for healthy diet and lifestyle.

Keywords: Healthy Lifestyle, Vegetables, Pandemic, Wuhan Virus, Influenza.

INTRODUCTION:

The Wuhan Virus is called the Novel Coronavirus 2019 because it is never before seen by mutation or by simple means in animals. First time, Coronavirus reported in Wuhan, China, on December 30, 2019. However, this name is only given by American President on the basis of the origin of the Pathogen. Another suggested term is “2019- nCov acute respiratory disease” which would comply with the World Health Organisation (WHO) naming practices. The International Committee on Taxonomy of Viruses will soon decide on a permanent name for this virus. The theory is that the virus mutated and spread from an infected animal carrier (a bat, cattle, cat, camel, or snake) to humans that were in direct proximity. Once in the human cell, the virus began to replicate, causing the infection and triggering the symptoms. Till date, a certain source of the outbreak is unknown. It is believed that the virus might be linked with a Seafood market (with seafood and live animals) from Wuhan, China, that was not complying with health and safety regulations. The Wuhan wet market has since been closed down for a period of time. So, for this

manuscript, let's leave the panic aside and see where that brings us. The Wuhan virus is the first major health threat of 2020, but it's far from being the first or the worst health crisis humanity faceing. Just few years ago we had the Ebola virus, Avian influenza, and SARS, with the last on This list is actually a type of coronavirus. All were highly contagious and potentially deadly, but none caused such a visceral reaction from the population. Even if we disregard those, we have the common flu virus that causes thousands of deaths early on, and we don't hear much about COVID- 19, Ofcourse, this coronavirus outbreak in China is a potential threat and has spread worldwide. Corona virus is a member of subfamily Orthocoronavirinae, family coronaviridae and order Nidovirales. Corona virus usually causes respiratory and gastrointestinal infections. The recent pandemic is due to the unique ß-coronavirus (COVID-19). The virus genome is single stranded RNA positive sense. Several studies have been carried out to find the origin of this virus, phylogenetic Analysis has also been performed and it revealed that this virus is from the bat origin. Bats serve as reservoir hosts for this virus. This virus is 82% similar to human coronavirus (SARS-CoV) and 50% to MERS-CoV. A number of studies have revealed that there was transmission of MERS-CoV from bats to camels. There are various theories regarding the current virus pandemic. Since time immemorial, all societies and ethnic groups eat vegetables because they are essential for maintaining human health. In simple terms, modern vegetable science deals with growing herbaceous plants for human consumption to meet basic nutritional needs. As the world's population grows, the demand for vegetables will continue to grow as well. Vegetable science, sometimes called olericulture, is one of the most dynamic and important fields of the agricultural sciences. The importance of vegetables has never been greater. Most definitions of a vegetable are not botanically based. Vegetable definitions are rather arbitrary by nature and commonly based on usage rather than plant morphology. For example, one widely used definition of a vegetable is: a herbaceous plant or portion of a plant that is eaten whole or in part, raw or cooked, generally with an entree or in a salad but not as a dessert. Of course, there are exceptions to this definition. Rhubarb, watermelon and cantaloupes are all considered vegetables but commonly used as desserts. Mushrooms are fungi and not plants but are generally considered to be vegetables, and their production is described in a later chapter. Since "vegetable" is not a botanical term, some vegetables botanically speaking are also fruits. In a botanical sense, a fruit describes a ripened ovary containing seeds together with adjacent parts that are eaten at maturity. For example, tomato, pepper, bean and cantaloupe botanically speaking meet the definition of fruit, but because of the way they are traditionally used and produced, they are considered to be vegetables. Therefore, since there are essentially two classification systems, some commodities may be classified as a vegetable based on their usage while at the same time, they are botanically fruits.

OBSERVATION

Some important Vegetables useful in the current Pandemic are as :

1. **Spinacea oleracea Family- Chenopodiaceae. (Spinach)**

This leafy green tops the chart as one of the healthiest vegetables, it has an impressive nutrient profile.One cup (30 grams) of raw spinach provides 56% of your daily vitamin A needs plus your entire daily vitamin K requirement, with just 7 calories. Spinach also boasts a great deal of antioxidants, minerals, which can help reduce the risk of chronic disease. One study found that dark green leafy vegetables like spinach have high levels of beta-carotene and lutein, two types of antioxidants that have been associated with a decreased risk of cancer. In addition, in 2015 a study found that spinach consumption may be beneficial for heart health, as it may lower blood pressure (Cruzat et.al). Spinach is rich in antioxidants that may reduce the risk of chronic disease, as it may reduce risk factors such as high blood pressure.

2. **Daucus carrota Family- Apiaceae (Carrot)**

Carrots are an amazing source of vitamin A, providing 42.8% of the daily recommended value in just one cup (128 grams) They contain beta-carotene, an antioxidant that gives carrots their vibrant orange color and could help in cancer prevention. In fact, one study revealed that for each serving of carrots per week, participants' risk of prostate cancer decreased by 5%. Another study showed that eating carrots may reduce the risk of lung cancer in smokers as well as compared to those who ate carrots at least once a week, smokers who did not eat carrots had a three times greater risk of developing lung cancer (Caroline et.al.). Carrots are also high in vitamin C, vitamin K and potassium. Carrots are especially high in beta-carotene, which can turn into vitamin A in the body. Their high antioxidant content may help reduce the risk of lung and prostate cancer.

3. **Brassica oleracea var- italica Family- Brassicaceae (Broccoli)**

Broccoli belongs to the Cruciferous family of vegetables. It is rich in a sulfur-containing plant compound known as glucosinolate, as well as sulforaphane, a by-product of glucosinolate. Sulforaphane is significant in that it has been shown to have a protective effect against cancer. In one animal study, sulforaphane was able to reduce the size and number of breast cancer cells while also blocking tumor growth in mice. Eating broccoli may help prevent other types of chronic disease, too. In 2010, animal study found that consuming broccoli sprouts could protect the heart from disease-causing oxidative stress by significantly lowering levels of oxidants . In addition to its ability to prevent disease, broccoli is also loaded with nutrients. A cup (91 grams) of raw broccoli provides 116% of your daily vitamin K needs, 135% of the daily vitamin C requirement and a good amount of folate, manganese and potassium. Broccoli is a Mustard family vegetable that contains sulforaphane, a compound that may prevent cancer growth. Eating broccoli may also help reduce the risk of chronic disease by protecting against oxidative stress.

4. **Allium sativum Family- Liliaceae (Garlic)**

In Indian culture, Garlic has a long history of use, as a medicinal plant, with roots tracing all the way back to ancient China and Egypt. The main active compound in garlic is allicin, a plant compound that is largely responsible for garlic’s variety of health benefits. Several studies have

shown that garlic can regulate blood sugar as well as promote heart health. In one animal study, diabetic rats were given either garlic oil or diallyl trisulfide, a component of garlic. Both garlic compounds caused a decrease in blood sugar and improved insulin sensitivity . Another study fed garlic to participants both with and without heart disease. Results showed that garlic was able to decrease total blood cholesterol, triglycerides and LDL cholesterol while increasing HDL cholesterol in both groups. Garlic may be useful in the prevention of cancer as well. One test-tube study demonstrated that allicin induced cell death in human liver cancer cells. However, further research is needed to better understand the potential anti-cancer effects of garlic. Studies show that garlic may help lower blood triglyceride levels. Some studies have also found that it could decrease blood sugar levels and may have an anti-cancer effect, although more research is needed.

5. **Brassica oleracea (Leaves group) Family- Brassicaceae (Brussels Sprouts or Karadi)**

In our country it is also called mixed Karadi, which means the group of mixed leafy vegetables of the Cruciferous family.Like broccoli, Brussels sprouts are a member of the cruciferous family of vegetables and contain the same health-promoting plant compounds. Brussels sprouts also contain kaempferol, an antioxidant that may be particularly effective in preventing damage to cells. One animal study found that kaempferol protected against free radicals, which cause oxidative damage to cells and can contribute to chronic disease. Brussels sprout consumption can help enhance detoxification as well. One study showed that eating Brussels sprouts led to a 15–30% increase in some of the specific enzymes that control detoxification, which could decrease the risk of colorectal cancer. Additionally, Brussels sprouts are very nutrient-dense. Each serving provides a good amount of vitamins and minerals, including vitamin K, vitamin A, vitamin C, folate, manganese and potassium. Brussels sprouts contain an antioxidant called kaempferol, which may protect against oxidative damage to cells and prevent chronic disease. They may also help enhance detoxification in the body.

6. **Portulaca oleracea Family- Portulacaceae (Kulpha)**

Like other leafy greens, Kulpha is well-known for its health-promoting qualities, including its nutrient density and antioxidant content. A cup (67 grams) of raw Kulpha leaves contains plenty of B vitamins, potassium, calcium and copper. It also fulfills your entire daily requirement for vitamins A, C and K . Due to its high amount of antioxidants, Kulpha may also be beneficial in promoting heart health. In 2008 a study on 32 men with high cholesterol drank 150 ml of Kulpha juice daily for 12 weeks. By the end of the study, HDL cholesterol increased by 27%, LDL cholesterol decreased by 10% and antioxidant activity was increased. Another study showed that drinking Kulpha juice can decrease blood pressure and may be beneficial in reducing both blood cholesterol and blood sugar. Kulpha is high in vitamins A, C and K as well as antioxidants. Studies show that drinking Kulpha juice could reduce blood pressure and LDL cholesterol while increasing HDL cholesterol.

7. **Pisum sativum Family - Fabaceae (Green Peas)**

Green Peas are considered a starchy vegetable. This means they have a higher amount of carbs and calories than non-starchy vegetables and may impact blood sugar levels when eaten in large amounts. Nevertheless, green peas are incredibly nutritious. One cup (160 grams) of cooked green peas contains 9 grams of fiber, 9 grams of protein and vitamins A, C and K, riboflavin, thiamin, niacin and folate. Because they are high in fiber, peas support digestive health by enhancing the beneficial bacteria in your gut and promoting regular bowel movements. Moreover, peas are rich in saponins. This spring vegetable is rich in several vitamins and minerals, making it an excellent addition to any diet. Just half a cup (90 grams) of asparagus provides one-third of your daily folate needs.This amount also provides plenty of selenium, vitamin K, thiamin and riboflavin. Getting enough folate from sources like asparagus can offer protection from disease and can prevent neural tube birth defects during pregnancy. Some test-tube studies also show that asparagus may benefit the liver by supporting its metabolic function and protecting it against toxicity. Asparagus is especially high in folate, which may help prevent neural tube birth defects. Test-tube Studies have also found that asparagus can support liver function and reduce the risk of toxicity.

8. **Brassica oleracea var - capitata Family- Brassicaceae (Red, violet Cabbage)**

This vegetable belongs to the cruciferous family of vegetables and, much like its relatives, is brimming with antioxidants and health-promoting properties.One cup (89 grams) of raw red cabbage contains 2 grams of fiber as well as 85% of the daily vitamin C requirement. Red cabbage is also rich in anthocyanins, a group of plant compounds that contribute to its distinct color as well as a whole host of health benefits. In 2012 an animal study, rats were fed a diet designed to increase cholesterol levels and increase plaque buildup in the arteries. The rats were then given red cabbage extract. The study found that red cabbage extract was able to prevent increases in blood cholesterol levels and protect against damage to the heart and liver.These results were supported by another animal study in 2014 showing that red cabbage could reduce inflammation and prevent liver damage in rats fed a high-cholesterol diet. Red cabbage contains a good amount of fiber, vitamin C and anthocyanins. Certain studies show that it may decrease blood cholesterol levels, reduce inflammation and lower the risk of heart attack and liver damage.

9. **Ipomoea batatas. Family- Convolvulaceae.(Sweet Potato)**

Sweet potatoes are an example of root vegetables, they stand out for their vibrant orange color, sweet taste and impressive health benefits. One medium sized sweet potato contains 4 grams of fiber, 2 grams of protein and a good amount of vitamin C, vitamin B6, potassium and manganese . It’s also high in a form of vitamin A, called beta-carotene. In fact, one sweet potato fulfills 438% of your daily vitamin A needs. Beta-carotene consumption has been linked to a significant decrease in the risk of certain types of cancer, including lung and breast cancer. Specific types of

sweet potatoes may also contain additional benefits. For example, Caiapo is a type of white sweet potato that may have an anti-diabetic effect. In one study, people with diabetes were given 4 grams of Caiapo daily over 12 weeks, leading to a reduction in both blood sugar and blood cholesterol levels. Sweet potatoes are high in beta-carotene, which may decrease the risk of some types of cancer. White sweet potatoes could also help reduce blood cholesterol and blood sugar levels.

10. Brassica oleracea var- capitata Family- Brassicaceae. (Indian Cabbage)

Cabbage green is a very nutrient-rich vegetable. One cup (190 grams) of cooked cabbage contains 5 grams of fiber, 4 grams of protein and 27% of your daily calcium needs. In fact, green cabbage is one of the best plant sources of calcium available, along with other leafy greens, broccoli and soybeans. Adequate calcium intake from plant sources can promote bone health and has been shown to decrease the risk of osteoporosis. Collard greens are also high in antioxidants and could even reduce your risk of developing certain diseases. One study found that eating more than one serving of collard greens per week was associated with a 57% decreased risk of glaucoma, an eye condition that can lead to blindness (Baeke et.al.). Another study showed that a high intake of vegetables in the Brassica family, which includes collard greens, may decrease the risk of prostate cancer. Collard greens are high in calcium, which could reduce the risk of osteoporosis. The regular intake of collard greens has also been associated with a reduced risk of glaucoma and prostate cancer.

11. Brassica oleracea var- caulorapa Family- Brassicaceae (Knol- Khol/ Kohlrabi)

Also known as the turnip cabbage or German turnip, kohlrabi is a vegetable related to the cabbage that can be eaten raw or cooked. Raw kohlrabi is high in fiber, providing 5 grams in each cup (135 grams). It's also full of vitamin C, providing 140% of the daily value per cup. Studies have shown that the antioxidant content of kohlrabi makes it a powerful tool against inflammation and diabetes. In one animal study, kohlrabi extract was able to decrease blood sugar levels by 64% within just seven days of treatment. Though there are different types of kohlrabi available, studies show that red kohlrabi has nearly twice the amount of phenolic antioxidants and displays stronger anti-diabetic and anti-inflammatory effects. Kohlrabi is rich in both fiber and vitamin C. Animal Studies show that kohlrabi could potentially cause a reduction in blood sugar. From providing essential vitamins and minerals to fighting disease, it's clear that including vegetables in your diet is crucial for good health. While the vegetables listed here have been extensively studied for their health benefits, there are plenty more vegetables that are also excellent for your health. Ensure that you are getting a good mix of vegetables in your diet to take advantage of their diverse health benefits and get the most nutritional bang for the fight against Coronavirus.

DISCUSSION:

Fruits and vegetables contain important vitamins, minerals and phytochemicals. They also contain fibres. There are many varieties of fruit and vegetables available and many ways to prepare, cook and serve them.A diet must be high in fruit and vegetables can help protect you against cancer, diabetes, COVID-19 and heart disease.One must eat five kinds of vegetable and two kinds of fruit every day for good health. During buying and serving fruit and vegetables, aim for variety to get the most nutrients and other necessary requirements of our body. Vegetables and fruit contain phytochemicals, vitamins, minerals and coenzymes. These biologically active substances can help to protect you from a variety of diseases. Scientific research shows that if you regularly eat lots of fruit and vegetables, you have a lower risk of Type 2 diabetes, Stroke, Cardiovascular diseases, Cancer, Coronavirus, High blood pressures etc.

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