Phytochemicals derived from plants are nonnutritional natural compounds that are important for numerous body functions in humans. Many of these compounds found in food products are known to have antioxidant potential due to the occurrence of OH group. The antioxidants prohibit the oxidative damage to various macromolecules like nucleic acids, proteins, and lipids and scavenge free radicals generated from biochemical reactions . A reaction of these free radicals with macromolecules has been reported to stimulate apoptosis that may cause various physiological, cardiovascular, and neurological disorders .

Non-nutrient bioactive substances in food and drink that might help protect against chronic diseases

• Carotenoids other than β-carotene: lycopene (red pigment of tomatoes) and lutein (xanthophyll, in leafy vegetables). Though not pro-vitamin A they are antioxidants, are absorbed and seen in the plasma, and lutein is one of the pigments of the retinal macula lutea.

• Polyphenols (flavonoids), antioxidants that occur in tea (especially green tea).

Antioxidants are natural or synthetic chemical constituents that protect human cells from the harmful effects of free radicals. Phytochemicals are natural chemical constituents derived from plants that provide various health benefits for humans.

Flavonoids :

The most abundant polyphenols in human diet, representing about 2/3 of all those ones ingested. They are water-soluble phenolic compounds (having a –OH group attached to an aromatic ring) and are found in the vacuoles of plant cells. Flavonoids are a diverse group of phytonutrients (plant chemicals) found in almost all fruits and vegetables. Along

with carotenoids, they are responsible for the vivid colors in fruits and vegetables. Flavonoids are the largest group of phytonutrients, with more than 6,000 types.

The beneficial health effects of flavoniods on diseases ranging from lowering blood pressure to cancer prevention. They are associated with skin protection, brain function, blood sugar and blood pressure regulation, in addition to antioxidant and anti-inflammatory activity. Flavonoids target molecules that improve beta-cell proliferation (the cells in the pancreas that make insulin), promote insulin secretion, reduce apoptosis , and improve hyperglycemia by regulating glucose metabolism in the liver.

Studies show flavonoids wield anticancer activity and hunt free radicals that can damage large molecules, including DNA. The therapeutic role of flavonoids in cardiovascular diseases, osteoarthritis, Parkinson's disease, colitis, cancer pain, arthritis, and neuropathic pain as powerful anti-inflammatory, analgesic (pain-relieving), and antioxidative molecules.

Before taking any flavonoids as supplements, talk to your doctor to avoid potential drug interactions.

Allicin: is a compound that may help ease inflammation and block free radicals that harm cells and tissues in your body. Alliin is a chemical found in fresh garlic and it is one of the main active components of garlic and what gives it its distinct taste and scent. The enzyme converts alliin into allicin called alliinase is activated when the clove is chopped or crushed.

Pure allicin only remains stable in freshly crushed or cut garlic for a short time. But letting garlic sit for 10 minutes after crushing or cutting. Allicin may help guard against health issues like heart disease and cancer. The compound is thought to support immune health by warding off agents that cause illness, such as viruses and fungi. Many studies have shown that the allicin in garlic may support health in various ways.

-Support Blood Vessel Health

Studies have shown that the allicin in garlic supports blood vessel health. It may also protect against blood vessel damage by helping to lower your:

- Blood sugar
- Blood pressure
- Cholesterol

Studies found that regular use of compounds in garlic lowered people's cholesterol levels by about 8%. It also helped lower the “bad fats” within your blood when taken for at least two months.

-Lower Blood Pressure

In adults with high blood pressure who took garlic supplements, the mean systolic blood pressure was around six points lower compared to people who took a placebo . Their diastolic blood pressure was almost nine points lower.

-Protect Against Cancer

multiple studies have shown that allicin and other active garlic compounds may shield against some cancers and keep cancer cells from spreading.

Research has explored its role against cancers of the:

- Breast
- Colon
- Liver
- Head and neck
- Ovaries
- Pancreas

- Prostate
- Skin

Possible Side Effects

Allicin supplements have a few risks you should be aware of.

Digestive Issues

The compound may cause issues such as:

- Belching
- Gas
- Nausea
- Diarrhea
- Heartburn

Taking it with food may help limit or prevent these problems. Allicin may raise the risk of bleeding. That is because this and other garlic compounds help keep blood clots from forming. Be sure to talk with your doctor if you also take a blood thinner such as warfarin and other herbal. If you are due to have surgery or another procedure, your doctor may recommend that you avoid garlic and products with its compounds for some time beforehand.

Drug Interactions and Precautions

If you have blood pressure or blood sugar issues and take medicines to manage these, be sure to talk with your doctor before you try allicin. Using allicin at the same time may cause your blood pressure or blood sugar to drop too low.

It is not known whether it is safe to take the compound for:

- Pregnant women

- Nursing mothers
- Children

Dosage and Preparation

Allicin products are sold in pill or tablet form and may have garlic or allicin on the label. They may also come in powder, oil. There is no standard dose for the compound. The dose can vary based on your health needs and the specific product. In general, it's best to follow the instructions on the label.

A single garlic clove has about 5 mg to 18 mg of allicin. Higher daily doses are often divided into multiple doses taken throughout the day. Breaking up doses may also help limit some of the digestive side effects.

Lutein:

Lutein is an antioxidant that belongs to the carotenoid group. It is related to beta-carotene and vitamin A. Many people think of lutein as "the eye vitamin." It is one of two major carotenoids found in the human eye (macula and retina). It is thought to function as a light filter, protecting the eye tissues from sunlight damage. Foods rich in lutein include egg yolks, spinach, corn, orange pepper, kiwi fruit, grapes, zucchini, and squash.

Lutein is commonly taken by mouth to prevent eye diseases, including cataracts and a disease that leads to vision loss in older adults . Lutein is used for many other conditions, but there is no good scientific evidence to support these other uses.

Lycopene:

Lycopene is a type of organic pigment called a carotenoid. It is related to beta-carotene and gives some vegetables and fruits (e.g., tomatoes) a red color. Lycopene is a powerful antioxidant that might help protect cells from damage. It's found in tomato, watermelon, red orange, pink grapefruit, and apricot. Lycopene is used for high blood

pressure, high cholesterol, cancer, and many other conditions, but there is no good scientific evidence to support most of these uses.

Uses & Effectiveness ?

Possibly Effective for

- Prostate cancer. Taking lycopene by mouth might slightly reduce the risk of developing prostate cancer. It might also slightly reduce the risk of prostate cancer returning.
- Bladder cancer. People who eat more lycopene in their diet seem to have a lower risk for bladder cancer.
- Diabetes. People who eat more lycopene in their diet seem to have a lower risk of developing diabetes.

There is interest in using lycopene for a number of other purposes, but there isn't enough reliable information to say whether it might be helpful.

Side Effects

When taken by mouth: Lycopene is commonly consumed in certain fruits and vegetables. When taken in supplements, doses of 15-45 mg daily have been safely used for up to 6 months.

Special Precautions and Warnings

Pregnancy and breast-feeding: Lycopene is likely safe during pregnancy and breast-feeding when eaten in typical food amounts. There isn't enough reliable information to know if lycopene supplements are safe to use when pregnant or breast-feeding. Stay on the safe side and stick to food amounts.

Surgery: Lycopene might slow blood clotting. It might increase the risk of bleeding during and after surgery. Stop using lycopene supplements at least 2 weeks before surgery.

Interactions ?

Moderate Interaction . Be cautious with this combination

- Medications that slow blood clotting (Anticoagulant / Antiplatelet drugs) interacts with LYCOPENE

Dosing

- Lycopene is commonly found in many fruits and vegetables, but particularly in tomato products, including fresh tomatoes, tomato sauce, ketchup, and tomato juice. A 130 gram serving of fresh tomatoes contains 4-10 mg of lycopene. Ketchup contains 3.3 mg per tablespoon.

لاتنتظر شيء يحدث أو شخص يأتي حتى تشعر بالفرح ...

أشعر بالفرح (هنا والان) وكل ما تتمناه سيتدفق إلى حياتك تلقائيا ....