FAQs

1:What are the Major Classes of Phytonutrients?

Some of the common classes of phytonutrients include:

- Carotenoids
- Flavonoids (Polyphenols) including Isoflavones (Phytoestrogens)
- Inositol Phosphates (Phytates)
- Lignans (Phytoestrogens)
- Isothiocyanates and Indoles
- Phenols and Cyclic Compounds
- Saponins
- Sulfides and Thiols

2: Why is it important to eat fruits and vegetables?

Fruits and vegetables are naturally:

- Low in fat
- Low in calories
- Low in sodium (some are sodium-free)
- Cholesterol-free
- Rich in fiber
- Chock full of vitamins, minerals and powerful phytochemicals

Eating plenty of fruits and vegetables enhances your health. The vitamins, minerals and phytochemicals found in produce work hard at boosting your immune system and in the long run help protect you against disease. The dietary fiber in fruits and vegetables fills you up, is great for your digestive health (relieves constipation), and carries out undesirable fats, toxins and carcinogens from your body. Also, if you're eating a fruit or vegetable that means you're *not* eating something processed which usually provides empty calories along with often times unhealthy ingredients!

3:Why are phytochemicals (a.k.a. phytonutrients) so important to our health?

A. Fruits and vegetables provide a concentrated source of phytochemicals which act as powerful antioxidants (a single orange contains about 170!) Antioxidants clear our body of free radicals which can damage our DNA. They also boost our immune system and in the long run can protect us against the effects of aging and help reduce the risk of heart disease, diabetes and certain cancers. If you have 5-9 servings of fruits and vegetables a day along with the other plant-based phytonutrient-rich foods (whole grains, legumes, nuts and seeds) you will supply your body with thousands of these disease-fighting compounds. It's important to note that phytochemicals are only found

in plant-based foods and are not found in processed foods or animal-based foods such as meat, chicken, fish, eggs, milk, cheese, etc

4:What are phytonutrients and where are they found?

The term "*phyto*" originated from a Greek word meaning plant. Phytonutrients are certain organic components of plants, and these components are thought to promote human health. Fruits, vegetables, grains, legumes, nuts and teas are rich sources of phytonutrients. Unlike the traditional nutrients (protein, fat, vitamins, minerals), phytonutrients are not "essential" for life, so some people prefer the term "phytochemical".

5:How do phytonutrients protect against disease?

The following are commonly proposed mechanisms by which phytonutrients may protect human health. More research is needed to firmly establish the mechanisms of action of the various phytochemicals.

Phytonutrients may:

- serve as antioxidants
- enhance immune response
- enhance cell-to-cell communication
- alter estrogen metabolism
- convert to vitamin A (beta-carotene is metabolized to vitamin A)
- cause cancer cells to die (apoptosis)
- repair DNA damage caused by smoking and other toxic exposures
- detoxify carcinogens through the activation of the cytocrome P450 and Phase II enzyme systems

6:What is Ellagic Acid

Ellagic acid is found in a number of berries and other plant foods, especially:

- Strawberries
- Raspberries
- Pomegranates

Ellagic acid may help protect against cancer several different ways. For example, it may slow the growth ofcancer cells. And it may help your liver neutralize cancer causing

chemicals in your system. But studies of this acid have mainly been done in the laboratory, so its benefits for human health is an unknown.

7: Explain Lycopene and its health benetits?

Lycopene is the natural substance responsible for the deep red color in many foods, most particularly in tomatoes. Many health benefits it provides such as a cancer fighting agent and a powerful antioxidant. Found in red carrots, is a type of carotene also found in tomatoes. It is believed to help prevent heart disease and, in conjunction with other phytochemicals, reduce the risk of certain cancers, including prostate cancer. The lycopene content of tomatoes depends on species and increases as the fruit ripens.

Health Benefits Heart diseases-Lycopene stops LDL cholesterol from being oxidized by free radicals and in turn cannot be deposited in the plaques which narrows and hardens the arteries. Acts as an internal sunscreen and protects your skin from sunburn. Lycopene is also been known to help prevent osteoporosis.

8:What are anthocyanins?

Anthocyanins are water-soluble phytochemicals with a typical red to blue color. Anthocyanins belong to the group of flavonoids They are food bioactive compounds implication on cardiovascular disease risk protection. Anthocyanins and pigments of the flavonoid class are found in purple carrots. They occur in all tissuse of higher plants they are clear, white to yellow counterparts of anthocyanins occurring in plants.

9: What are the important food sources of phytochemicals?

Some of the important food sources are

- Soy
- Tomato
- Broccoli
- Garlic
- Flax seeds
- Citrus fruits
- Melons: cantaloupe, watermelon

- Pink grapefruit
- Blueberries
- Sweet potatoes
- Chili peppers
- Legumes: beans, and lentils

10:What is colour wheal ?

By eating fruits and vegetables of a variety of different colors, one can get the best all-around health benefits. Each different color fruit and vegetables contains unique health components that are essential to our health.

Fruits and vegetables are very important to our health because they are whole foods, created by nature, that are rich in a large amount of nutrients. The processed foods that we so commonly eat, can never compare to the health benefits provided by strawberries or broccoli, which have fiber, vitains and enzymes built right in. Eating a rainbow of coloured fruit and vegetables ensures people are getting a variety of essential nutrients, like vitamins and dietary fibre

11:Define the Medicinal properties.of chilies?

Chilis, capsicum:Medicinal properties.

Capsaicin is considered a safe and effective analgesic agent in case of arthritis pain,herpeszoster -related pain, diabiatic neuropathy and headaches .Red chilies contain large amounts of vitamin-C and small amounts of carotene (provitamin A). Yellow and especially green chilies (which are essentially unripe fruit) contain a considerably lower amount of both substances. In addition, peppers are a good source of most B vitamins ,Vitamin $B_{6.}$ They are very high in potassium ,magnesium ,rich in vitamin –C as well as iron.

The substances that give chili peppers their intensity when ingested or applied topically are capsaicin (8-methyl-*N*-vanillyl-6-nonenamide) and also other few chemicals, it is collectively known as capsaicinoids. **Capsaicin** are chemically(**8-methyl-*N*-vanillyl-6-nonenamide**) ,it is a volatile, hydrophobic,colouless,waxy compound.

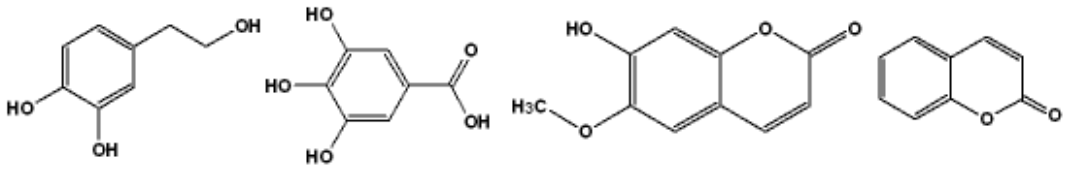
12:Define Phytoestrogen andAllicin

Phytoestrogens are plant-based compounds that are structurally similar to estrogen, the primary female sex hormone. Phytoestrogens may reduce risk of adult bone loss and the sensation of elevated body temperature known as “hot flashes”.

Allicin :Allicin is an organosulfur compound obtained from garlic, a species in the family Alliaceae.

13:What are phytochemicals?

Phytochemicals are non-nutritive plant chemicals that have protective or disease preventive properties. They are non-essential nutrients, meaning that they are not required by the human body for sustaining life. It is well-known that plant produce these chemicals to protect themselves but recent research demonstrate that they can also protect humans against diseases. There are more than thousand known phytochemicals. Some of the well-known phytochemicals are lycopene in tomatoes, isoflavones in soy and flavanoids in fruits.



14:How do phytochemicals work?

There are many phytochemicals and each works differently. These are some possible actions:

- **Antioxidant** - Most phytochemicals have antioxidant activity and protect our cells against oxidative damage and reduce the risk of developing certain types of cancer. Phytochemicals with antioxidant activity: allyl sulfides (onions, leeks, garlic), carotenoids (fruits, carrots), flavonoids (fruits, vegetables), polyphenols (tea, grapes).

- **Hormonal action** - Isoflavones, found in soy, imitate human estrogens and help to reduce menopausal symptoms and osteoporosis.

- **Stimulation of enzymes** - Indoles, which are found in cabbages, stimulate enzymes that make the estrogen less effective and could reduce the risk for breast cancer. Other phytochemicals, which interfere with enzymes, are protease inhibitors (soy and beans), terpenes (citrus fruits and cherries).

15:How do we get enough phytochemicals?

Foods containing phytochemicals are already part of our daily diet. Some foods, such as whole grains, vegetables, beans, fruits and herbs, contain many phytochemicals. The easiest way to get more phytochemicals is to eat more fruit (blueberries, cranberries, cherries, apple,...) and vegetables (cauliflower, cabbage, carrots, broccoli,...). It is recommended take daily at least 5 to 9 servings of fruits or vegetable. Fruits and vegetables are also rich in minerals, vitamins and fibre and low in saturated fat.