



Health benefits of Vegetables and legumes

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Vegetables and green leafy vegetables provide several vitamins and minerals and offer protection from micronutrient deficiencies and various diseases.

- Include fresh vegetables and fruits, which are store houses of micronutrients. Fresh fruits are nutritionally superior to freshly prepared fruit juices.
- Fruits and vegetables are sources of phytonutrients and fibre which are of vital health significance.
- They are also sources of prebiotics and thus help in improving intestinal flora and gut health.
- They enhance immune function and reduce the risk of infections.
- They help in prevention of micronutrient malnutrition and certain chronic diseases such as HTN, CHD, stroke, DM, cancer, etc
- Root vegetables like carrots, radish, beetroot, knol-kohli, and turnip should be preferred to tubers like potato, yam, colocasia and cassava
- Incorporate GLVs in complementary feeds of infants.
- Eat a variety of vegetables and fruits in all your meals in various forms (raw salad, curry, dry cooked vegetables, soups, as raita mixed with curd or added to pulse and cereal preparations)

preparations).

- Increase intake of vegetables and fruits during pregnancy.

Why should we eat vegetables/fruits?

Fresh vegetables and fruits are sources of micronutrients, phytonutrients, bioactive substances and fibre. The micronutrients present are minerals and vitamins and the macronutrients present are complex carbohydrates and fibre and hence adequate intake of these promote health. Most vegetables (<20 Kcal/100g raw) and fruits (<60 Kcal/100g) provide very low calories, whereas some roots/tubers such as potato, sweet potato, tapioca and yam (70–100 Kcal/100g raw) as well as fruits like banana are rich in starch, which provide energy in good amount. Leafy vegetables also provide carotenoids, iron, folate, calcium and other important nutrients. Prebiotics present in various vegetables and fruits induce favorable changes in the gut microbiota (microbes) and enhance microbial diversity with beneficial effect on health.

Vegetables- A rich source of vitamins and minerals

- Vitamins - vitamin A, vitamin C, and vitamin E, some B vitamins such as folate
- Minerals - iron, copper, zinc, calcium, magnesium and potassium.
- Phytochemical compounds (carotenoids, alkaloids, terpenoids, flavonoids, phenolics and bioactive peptides).
- Antioxidants
- High-fibre content
- Low in fat and calories-prevents overweight

In India, intake of vegetables and fruits is extremely low. People in India eat merely 100g to 200g of vegetables and fruits per day while the recommendation is 500g per day. Intake of recommended amount of vegetables and fruits decrease the risk of chronic NCDs such as diabetes, hypertension, stroke, coronary heart disease and cancer.

What are microgreens?

Microgreens are young, tender plants of herbs, vegetables or even grains, with just one to two sets of leaves. Alternatively, microgreens are young plants that are harvested within a week to ten days after sowing the seeds. Microgreens are rich sources of nutrients such as amino acids, fatty acids, micronutrients and various bioactive compounds and phytochemicals. These are emerging functional foods which when consumed even in small quantity have the potential to prevent various diseases.

deficiencies and diseases. These microgreens can be used in salads, soups, sandwiches and minimally processed dishes to embellish various recipes/cuisines.

Research on microgreens shows that they are high in aliphatic glycosylates, polyphenols and serve as dietary carriers to provide naturally occurring antioxidant compounds with strong antioxidant capacity e.g. amaranth, basil, mustard, peas, parsley, beet, coriander, broccoli, celery, etc. The microgreens of red cabbage have been shown to modulate the lipid profile favorably and that of fenugreek show anti-diabetic activity.

What functions do the nutrients and phytonutrients in vegetables and fruits perform in our body?

Iron

Iron is an essential element necessary for the formation of hemoglobin, the red pigment present in the red cells of blood. Hemoglobin plays an important role in the transportation of oxygen to the tissues. Reduction in hemoglobin in blood leads to anemia, a condition characterized by paleness and easy fatigue and increased susceptibility to infections. Iron is available in plenty in green leafy vegetables, but the absorption is limited. Vitamin C rich foods like guava or orange must be consumed after meals to improve iron absorption.

Vitamin A

Carotenoids (precursors of vitamin A) are plentiful in fruits and vegetables that are green or deep yellow / orange in colour, such as green leafy vegetables, carrots, tomatoes, capsicum, orange-flesh, sweet potatoes, papaya, mango, etc. This fat-soluble vitamin is necessary for clear vision (even in dim light) and for maintenance of the integrity of epithelial tissues. In vitamin A deficiency, the white of the eye (conjunctiva) loses its luster, becomes dry and could manifest as Bitot's spots (foamy white patches). In severe vitamin A deficiency, the black area of the eye (cornea) gets ulcerated, leading to irreversible blindness in young children. Vitamin A also has a role in maintaining resistance of the body to common infections.

Vitamin C

Vitamin C is abundantly available in fresh citrus fruits, guava, amla and certain vegetables such as tomatoes. Vitamin C is an essential nutrient required for healthy

vegetables such as tomatoes. Vitamin C is an essential nutrient required for healthy bones and teeth. It also promotes iron absorption. Vitamin C deficiency is characterized by weakness, bleeding gums and defective bone growth. However, it is very susceptible to destruction by atmospheric oxidation. It is for this reason that when vegetables become dry and stale or cut and exposed to air or cooked and consumed, most of the vitamin originally present is destroyed.

Folates / Folic acid

Green leafy vegetables are good sources of folates. It is a B vitamin essential for multiplication and maturation of red cells in our body and its deficiency also leads to anemia. Folic acid intake during pregnancy prevents neural tube defects in the fetus. It also promotes the birth weight of infants. Folic acid deficiency increases homocysteine levels in blood, thereby increasing the risk of stroke and heart disease

Calories

Many of the vegetables and fruits have low calories (<20 Kcal/100gm). Large intake of such vegetables and fruits can help in reducing calories in diet and help in obesity management. On the other hand, vegetables like colocasia, potato, tapioca, yam, sweet potato and fruits like banana, avocado, pear and mahua (buttercup) have 70 to 100 or more than 100 Kcal per 100g and should be consumed in moderate amounts.

Phytonutrients

Vegetables provide phytonutrients and are of considerable health significance. Among these, dietary fibre, antioxidants and other bio-active constituents require special mention. These phytonutrients delay the effects of ageing and prevent diseases such as cardio-vascular diseases, stroke, diabetes and cancer.

Dietary Fibre

Fresh fruits and vegetables are rich sources of dietary fibre. Dietary fibre is important for proper bowel function and reduces constipation and risk of developing piles. It also reduces the absorption of cholesterol, and has a protective role in coronary heart diseases, diabetes and obesity. The protective role of dietary fibre against colon cancer has long been recognized.

Antioxidants

Vegetables and fruits are rich sources of antioxidants and restrict the damage to cell and cellular components. Raw and fresh vegetables like green leafy vegetables, carrots, fresh fruits including citrus and tomatoes have been identified as good sources of antioxidants. Vitamin C and carotenoids that are present in these vegetables are also potential antioxidants. Different colored vegetables provide different antioxidants. Green and orange colored vegetables provide beta-carotene, red vegetables provide lycopene, deep red ones provide betalains, blue and purple ones provide anthocyanins, etc. Vegetables and fruits play a major role in protecting from certain diseases, such as damage to blood vessels, cancer, inflammatory joint diseases, asthma and diabetes.

How much fruits and vegetables should one consume?

Taking into consideration the nutrient requirements, it is recommended that every individual should consume at least 400g of vegetables (GLV: 100g; Other vegetables: 250g; Roots and Tubers: 50g) and 100g of fresh fruits every day. During pregnancy, requirements of iron and folic acid are higher and therefore pregnant women should consume an additional 100g of leafy vegetables daily. Intake of tubers such as potato, yam, colocasia and cassava must be restricted.

Which vegetables and fruits should be preferred?

We should consume fresh, locally available and preferably seasonal vegetables and fruits. These have higher level of micronutrients and are also tastier. However, no single fruit or vegetable provides all the nutrients one needs. The key lies in eating a variety of them and with different colors. Include commonly consumed leafy greens, tomatoes, berries and other vegetables, apart from those which are yellow, orange, red, deep red and purple. Colored citrus fruits, being vitamin C rich enrich the diets significantly. Root vegetables like carrots, radish, beetroot, knol-kohlrabi, and turnip should be preferred to tubers like potato, yam, colocasia and cassava.

How to prevent cooking losses ?

Vegetables should be washed before cutting or peeling to prevent nutrient loss. Further, proper methods of cooking should be adopted to reduce the losses. Nutrient loss is high when the vegetables are washed after cutting or when they are cut into small pieces for cooking.

Source: [National Institute of Nutrition, Hyderabad](#)

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