

3 FRUIT AND VEGETABLE NUTRITION

Wondering what's so good about fruit and vegetables and why we should be eating at least 5 portions* every day? ...Fruit and vegetables are bursting with vitamins, minerals and potent antioxidants essential to health.

The real value of fruit and vegetables may be realised through (i) the following charts on vitamins, mineral functions and their specific sources, and more importantly (ii) in the eating!

* 80g per portion

Functions of Vitamins and Minerals

(A) VITAMINS

Vitamins	Functions
A	Immune system. Skin health. Eyesight. Health of linings eg. in nose, eyes, lungs.
B	Energy. Nervous system. Formation of new blood cells. Transport and metabolism of iron.
C	Iron absorption. Antioxidant. Nerves and blood vessels.



Vitamins	Functions
D	Healthy bones and teeth. Absorption of calcium and phosphorous.
E	Antioxidant – protects cell membranes.
Folate	Formation of blood cells. Neural tube development. Maintenance of normal homocysteine levels – high levels being a risk factor for heart disease.
K	Blood clotting. Normal bone structure.

Key

- Fat soluble
- Water soluble

(B) MINERALS

Minerals	Functions
Calcium	Strong bones and teeth. Normal blood clotting. Nerves and muscles.
Magnesium	Muscles, bones and teeth eg. aids absorption of calcium. Metabolism. Water balance.
Potassium	Water balance. Nerves.
Sodium	Water and electrolyte balance. Nerve function.
Manganese	Enzyme activity. Normal bone function.
Iron	Transports oxygen. Immune system. Normal metabolism.
Selenium	Immune function. Thyroid hormones.
Zinc	Immune function. Wound healing. Reproductive health and normal development.

DON'T FORGET FIBRE
Although not a nutrient, fibre is a valuable component of a healthy diet preventing constipation when consumed with plenty of fluids, and feeding friendly gut bacteria (prebiotic). In addition soluble fibre may help lower blood glucose and cholesterol levels.

Fruit and vegetable SOURCES of vitamins and minerals

Fruit & Vegetables	Good Sources of.....
Artichoke	Vitamin C and K, Folic acid, Calcium, Iron, Phosphorous.
Asparagus	Vitamins B6, C and E, Folic acid.
Aubergine	Vitamin C, Pro-Vitamin A, Folic acid, Vitamin K.
Beetroot	Manganese.
Bell Pepper	Vitamin C.
Broad beans	Pro-vitamin A, Vitamins C and E.
Broccoli	Pro-vitamin A, Vitamin C, Iron, Manganese, Folic acid.
Brussels sprouts	Pro-vitamin A, Vitamins B and C.
Cabbage	Pro-vitamin A, Vitamins B and C.
Carrots	Pro-vitamin A.
Cauliflower	Vitamins C, K, B1 and B6.
Celery	Sodium, Potassium.
Celeriac	Potassium.
Chilli pepper	Pro-vitamin A, Vitamin C.
Courgette	Pro-vitamin A, Vitamins C and E, Folic acid.
Cucumber	Potassium.
Fennel	Vitamin C.
Kale	Pro-vitamin A, Vitamin C, Vitamin K, Folic acid.

The specified vitamins and minerals are those which are particularly high in the listed fruit and vegetables.

However, these fruit and vegetables also contain a range of other minerals and vitamins as well as plant nutrients.

Fruit & Vegetables	Good Sources of.....
Kiwi	Vitamin C.
Leeks	Folic acid, Vitamin K and C, Pro-vitamin A.
Lettuce	Vitamins C and K, Folic acid.
Marrow	Pro-vitamin A, Vitamins C and E, Folic acid.
Mango	Potassium, Vitamin C, Pro-vitamin A.
Melon	Vitamins C and K.
Parsley	Calcium, potassium, Pro-vitamin A, Vitamin C, Folic acid, Iron.
Parsnip	Vitamin C and K.
Peas	Pro-vitamin A, Vitamin C, Vitamin B1, Folic acid.
Pumpkin	Pro-vitamin A, Vitamins B1, C and E.
Radishes	Vitamins C and K.
Salad leaves	Folic acid.
Spinach	Pro-vitamin A, Vitamin C.
Squash - winter	Vitamins B1 and E.
Squash - summer	Manganese, Magnesium, Vitamin C, Pro-vitamin A.
Sweet corn	Pro-vitamin A and C.
Strawberries	Vitamin C, Folic acid.
Swede	Pro-vitamin A, Vitamins B and C.
Tomato	Pro-vitamin A, Vitamin C.
Watercress	Zinc, Iron, Calcium, Pro-vitamin A, Vitamins B1 and B6.

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Antioxidants

Antioxidants are substances which stop or neutralise the activity of cell damaging 'free radicals', produced as a result of oxidation. Research shows that antioxidants, such as those found in fruits and vegetables have protective action against some cancers and cardiovascular disease.

FREE RADICALS

These are highly reactive oxygen molecules which are harmful to the body. They are produced in small amounts as the result of normal metabolism and generated in larger amounts when exposed to external factors such as cigarette smoke, alcohol, pesticides and air pollution.

Different antioxidant compounds form different coloured pigments, responsible for the colour of fruit and vegetables. It therefore makes sense that eating a variety of differently coloured fruit and vegetables (see pg 72) should ensure that a wide range of health-giving plant nutrients are included in the diet.

DID YOU KNOW?

Health-giving carotenoids, such as beta-carotene, lutein, and lycopene, are fat-soluble. Consuming carotenoid-rich foods eg sweet potato, tomatoes, peppers with a little healthy fat eg. olive oil, avocado, or unsalted nuts will increase their absorption.

Antioxidant	Fruit & Vegetable Sources
Beta-carotene	Carrots, melons, sweet potatoes, spinach.
Anthocyanins/ Flavonoids	Red cabbage, aubergine, beetroot, blueberries, blackberries, red onion.
Lycopene	Tomatoes, red carrots, red peppers.
Lutein*	Sweetcorn, kale, broccoli, spinach.
Quercetin	Apples, onions.
Chlorophyll	Broccoli, kale, brussel sprouts, salad leaves, cucumber skin.

*yellow pigmentation of lutein is masked in foods where it is most concentrated eg. green leafy vegetables as these foods also contain other highly pigmented antioxidant compounds.