
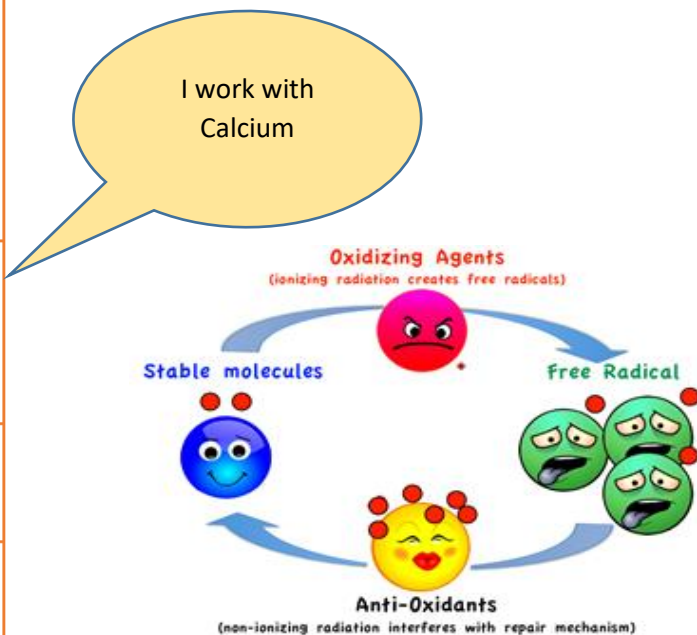


Vitamins Knowledge organiser

Fat Soluble Vitamins ADEK

Vitamin	Function	Sources	Deficiency (not enough)
Vitamin A (Retinol) fat Soluble 	Keeps the skin healthy <ul style="list-style-type: none"> • Helps us see in dim light • Helps children to grow • Keeps mucous membranes moist and healthy • An antioxidant 	Animal (retinol); milk, cheese, butter, eggs, liver, kidney, oily fish, added to veg. fat spreads Plant (beta carotene): cabbage, spinach, kale, lettuce, peas, orange/red/yellow veg. + fruit	Dry + infected skin + mucus membranes <ul style="list-style-type: none"> • Children don't grow properly • Night blindness leading to total blindness • Poisonous in excess e.g. in supplements, especially to unborn babies. Excess: Over time can weaken bones
Vitamin D (Cholecalciferol) fat soluble	Helps calcium to be absorbed in the body • Helps calcium to strengthen the bones and teeth	Sunlight on skin; oily fish, meat, eggs, butter, added to veg. fat spreads, fortified breakfast cereals	<ul style="list-style-type: none"> • Bones weaken + bend = Rickets in children + Osteomalacia in adults Excess: can make you absorb too much calcium—this can lead to kidney dam-
Vitamin E (Tocopherol) fat soluble	<ul style="list-style-type: none"> • an antioxidant (helps prevent heart disease + cancer) 	Soya, corn oil, olive oil, nuts, seeds, whole wheat, veg. fat spreads	<ul style="list-style-type: none"> • A deficiency is rare
Vitamin K (Phylloquinone) fat soluble	<ul style="list-style-type: none"> • Helps the blood to clot when the body is injured 	Green leafy veg. liver, cheese, green tea	<ul style="list-style-type: none"> • Babies sometimes lose some blood at birth



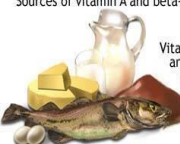
Antioxidants are ACE

What are Antioxidants?

- Antioxidants are the vitamins A,C and E. (ACE)
- Antioxidants **prevent reactive "free radicals"** from damaging cells in our body.
- Free radicals, if NOT mopped up by the antioxidant vitamins A,C and E would cause inflammation, cancer, early ageing and even heart disease.
- **Antioxidants are said to prevent disease.** Eating foods rich ACE vitamins is very good for us.
- What should we eat? **Fresh fruit, salads, vegetables, olive oil, soya, nuts and seeds, oily fish and eggs, and wholemeal cereals for wheat germ.**

Vitamin A

Sources of vitamin A and beta-carotene:




Vitamin A comes from animal sources such as eggs, meat and dairy products

Beta-carotene, a precursor of vitamin A, comes from green, leafy vegetables and intensely colored fruits and vegetables

Vitamin C


Citrus fruits, green peppers, strawberries, tomatoes, broccoli and sweet and white potatoes are all excellent food sources of vitamin C (ascorbic acid)



Vitamin E

Tocopherol

Vitamin E is found in corn, nuts, olives, green, leafy vegetables, vegetable oils and wheat germ, but food alone cannot provide a beneficial amount of vitamin E, and supplements may be helpful



Water Soluble vitamins BBC

Vitamin	Function	Sources	Deficiency (not enough)
Vitamin B1 (Thiamine) water soluble	<ul style="list-style-type: none"> Helps energy to be released from carbohydrate in the body 	Meat, especially pork, milk, cheese, eggs, veg. fresh + dried fruit, whole-meal bread, fortified breakfast cereals, flour	<ul style="list-style-type: none"> Tiredness and weak muscles. (In severe cases) Beri-beri which affects heart, blood vessels and nervous system
Vitamin B2 (Riboflavin) water soluble	<ul style="list-style-type: none"> Helps energy to be released from carbohydrate, fat and protein in the body. Repairs body tissues. 	Milk + milk products, eggs, fortified breakfast cereals, mushrooms, cheese, leafy greens	<ul style="list-style-type: none"> Mouth gets sore at the corners . Dry skin and a sore throat.
Vitamin B3 (Niacin) water soluble	<ul style="list-style-type: none"> Helps energy to be released from food in the body. Maintains a healthy nervous system and skin. 	Beef, pork, wheat flour, maize flour, eggs, milk, nuts, fish	<ul style="list-style-type: none"> Pellagra (a disease causing fatigue, depression and loss of memory) diarrhoea, dementia, dermatitis.
Vitamin B9 (Folate or folic acid) water soluble	<ul style="list-style-type: none"> Works with vitamin B12 to make healthy red blood cells Helps to reduce the risk of unborn babies developing spina bifida 	Green leafy veg, yeast extract, peas. Liver, chickpeas, added to Breakfast cereals and bread	<ul style="list-style-type: none"> Anaemia, tiredness and nerve damage in extreme cases. Vegans are most likely to have too little. May lead to spina bifida in babies if there are low levels at conception. Megaloblastic anaemia (large red blood cells)
Vitamin B12 (Cobalamin) water soluble	<ul style="list-style-type: none"> Works with vitamin B9 to make healthy red blood cells Keeps nerve cells healthy 	Liver, meat, fish, cheese, fortified breakfast cereals, yeast	<ul style="list-style-type: none"> Pernicious anaemia
Vitamin C (Ascorbic acid) water soluble	<ul style="list-style-type: none"> Protects the body from infections and allergies. Helps the body absorb iron Keeps connective tissue, which binds the body cells together, healthy Heals wounds An antioxidant 	Fruits + veg. especially citrus fruits (e.g. oranges, lemons, limes, grapefruit), blackcurrants, kiwi, Brussel sprouts, cabbage, broccoli, new potatoes, milk + liver	<ul style="list-style-type: none"> Scurvy (tiredness and bleeding gums) Anaemia (not enough iron absorbed) Bleeding under skin Loose teeth Wounds do not heal Increased risk of cancer

Water soluble Vitamin loss

- Vitamin C and the B group vitamins water soluble and are very unstable!
- They are lost in cooking water as they **dissolve in water** so use minimal water to boil and use the water for gravy, soup and sauces.
- Vitamin C is very easily destroyed by heat and cooking and is also lost from fresh foods over time. Don't over boil your vegetables!
- Enzymes in food destroys the vitamin C and B group, so **store fresh food in the fridge** to SLOW DOWN ENZYMES. M.A.P. is good for salad leaves.
- Buy and Eat fresh, ripe fruit and vegetable. Store away from heat and light.
- Steam vegetables, not boil them, to get the most B vitamins and the most vitamin C. Serve the veg' immediately as vitamin C is lost over time.
- Tear up salad leaves rather than cut them with a knife as cell walls are not broken and enzymes are not released.

I work with Iron