

Vitamins

Key Words: fat soluble: vitamins in fatty foods. **Water soluble:** found in foods with high water content

Vitamin	Function	Sources	Deficiency (not enough)
Vitamin A (Retinol) fat Soluble	<ul style="list-style-type: none"> Keeps the skin healthy Helps us see in dim light Helps children to grow Keeps mucous membranes moist and healthy An antioxidant 	<p>Animal (retinol); milk, cheese, butter, eggs, liver, kidney, oily fish, added to veg. fat spreads</p> <p>Plant (beta carotene): cabbage, spinach, kale, lettuce, peas, orange/red/yellow veg. + fruit</p>	<p>Dry + infected skin + mucus membranes</p> <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.
Vitamin D (Cholecalciferol) fat soluble	<ul style="list-style-type: none"> 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
Vitamin E (Tocopherol) water 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) water 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
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"> Beri—beri affects nerves + muscles
Vitamin B2 (Riboflavin) water soluble	<ul style="list-style-type: none"> Helps energy to be released from carbohydrate, fat and protein in the body 	Milk + milk products, eggs, fortified breakfast cereals, mushrooms	<ul style="list-style-type: none"> Mouth gets sore at the corners
Vitamin B3 (Niacin) water soluble	<ul style="list-style-type: none"> Helps energy to be released from food in the body 	Beef, pork, wheat flour, maize flour, eggs, milk	<ul style="list-style-type: none"> Pellagra (diarrhoea, dementia, dermatitis)
Vitamin B9 (Folate) 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 (marmite), peas, chickpeas, asparagus, wholegrain rice, fruits, added to some breads = breakfast cereals	<ul style="list-style-type: none"> May lead to spina bifida in babies Megaloblastic anaemia (large red blood cells)
Vitamin 12 (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"> Helps the body absorb iron Keeps connective tissue, which binds the body cells together, healthy 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 Anaemia (not enough iron absorbed) Bleeding under skin Loose teeth Wounds do not heal



Vitamins that work with other vitamins or minerals:

- **Vitamin C** is needed to help the body absorb iron, so it can be used to collect oxygen and carry it round to all the cells in the body for energy production.
- Vitamin D is needed to help the body absorb **calcium**, so that it can be used to strengthen the bones and teeth and enable the nerves and muscles to work together.

Groups that may need vitamin supplements:

- Pregnant women** – •If not eating properly due to morning sickness. •Growing baby needs iron, iodine, calcium, protein, B vitamins, which might deplete the amount needed to maintain mother’s body. The baby needs to build up a store of iron and needs calcium and other minerals to develop its skeleton.
- Young children**— •Might not be absorbing all they need because digestive system is not fully developed. •They may have been premature and need extra nutrients to catch up. •They may have poor or small appetites or be fussy eaters, so won’t eat enough of a variety of foods to get all their nutrients.

How to prevent damage and loss of vitamins to vegetables and fruit:

Storage:

- Store away from heat and light
- Store in air-tight containers in a cool place
- Store for minimum amount of time

During preparation:

- Buy undamaged and unbruised produce
- Tear rather than rip leafy vegetables
- Do not prepare too far in advance; vitamin C will be exposed to oxygen and lost when the vegetables are cut or peeled.



Amounts needed for different life stages:



Age/gender		Vitamin									
		A	D	E	K	B1	B2	B3	B9	B12	C
Children	1–3 years	400mcg	#	–	–	0.7mg	0.6mg	–	70mcg	0.5mcg	30mg
	4–6 years	500mcg	#	–	–	0.9mg	0.8mg	–	100mcg	0.8mcg	30mg
	7–10 years	500mcg	#	–	–	1.0mg	1.0mg	–	150mcg	1.0mcg	30mg
Teenagers (male)	11–14 years	600mcg	#	–	–	1.2mg	1.2mg	–	200mcg	1.2mcg	35mg
Teenagers (female)	11–14 years	600mcg	#	–	–	1.0mg	1.1mg	–	200mcg	1.2mcg	35mg
Teenagers (male)	15–18 years	700mcg	#	–	–	1.5mg	1.3mg	–	200mcg	1.5mcg	40mg
Teenagers (female)	15–18 years	600mcg	#	–	–	1.2mg	1.1mg	–	200mcg	1.5mcg	40mg
Adults (male)	19–50 years	700mcg	#	4mg	0.001 mg for each kg body weight (all adults)	1.4mg	1.3mg	17mg	200mcg	1.5mcg	40mg
	(female)	19–50 years	600mcg	#		3mg	1.2mg	1.1mg	13mg	200mcg	1.5mcg
(male)	50+ years	700mcg	^	4mg		0.9mg	1.3mg	17mg	200mcg	1.5mcg	40mg
(female)	50+ years	600mcg	^	3mg		0.8mg	1.1mg	13mg	200mcg	1.5mcg	40mg
Pregnant women		700mcg	*	–		0.9mg	1.4mg	13mg	300mcg	1.5mcg	50mg
Women lactating (breastfeeding) for up to 4 months		950mcg	*	–		1.0mg	1.4mg	13mg	260mcg	1.5mcg	70mg
Women lactating (breastfeeding) for over 4 months		950mcg	*	–		1.0mg	1.4mg	13mg	260mcg	1.5mcg	70mg