

VITAMINS

VITAMIN A

- supports cell growth and development
- maintains healthy skin, hair, nails, bones and teeth
- supports immune system and strong adrenals
- needed for night and colour vision
- beta-carotene MAY prevent heart disease, cataracts, macular degeneration & possibly lung disease

Found in:

- derived from yellow-orange plant foods that contain beta-carotene
- beta-carotene converts to Vit. A by the liver
- best sources of Vit. A – calf's liver, oily fish, milk, cheese, butter, egg yolks
- best sources of beta-carotene – carrots, sweet potato, winter squash, broccoli, collard greens, kale, spinach, apricots, cantaloupe, peaches, nectarines, mangos, and papaya

AGE	RDA	DAILY UPPER LIMITS
1 – 3 years	300 mcg	600 mcg
4 – 8 years	400 mcg	900 mcg
9 – 13 years	600 mcg	1700 mcg
Boys 14-18 years	900 mcg	2800 mcg
Girls 14-18 years	700 mcg	2800 mcg
Men 19 + years	900 mcg	3000 mcg
Women 19+ years	700 mcg	3000 mcg
Pregnancy	770 mcg	
Breastfeeding	1300 mcg	

Contra-indications

- people with liver disease – because Vit A is fat soluble, the body stores it and can become toxic over time
- high doses in pregnant women may cause birth defects
- beta-carotene becomes a safe alternative
- smokers need to avoid beta-carotene supplements; research has shown 20 mg per day for 5-8 years increases risk of lung cancer – need to get sources from foods only

1000-10,000 IU (International Units) equals 0.5 – 5.5 milligrams

Symptoms of Vitamin A deficiency:

VITAMINS

- dry hair, split ends, or hair falling out
- dry or scaly skin
- dry, scaly, or red eyelids
- eye inflammation or pink eye (conjunctivitis)
- eyes have difficulty adjusting when entering a dark room
- eyes sensitive to sunlight, glare, or bright lights
- frequent colds, flu, or other infections
- reduced night vision or inability to see in dim light
- rough bumps on back of arms
- sinus problems or sinusitis
- swollen eyelids or sties on eyes
- urinary tract infections (also bladder or kidney – cystitis)
- warts

VITAMIN B1 (Thiamin)

One of 8 vitamins in the B family, thiamin is needed for energy metabolism. Thiamin also maintains normal appetite and nerve function.

AGE	RDA	DAILY UPPER LIMITS
1 – 3 years	0.5 mg	<i>None established</i>
4 – 8 years	0.6 mg	
9 – 13 years	0.9 mg	
Boys 14-18 years	1.2 mg	
Girls 14-18 years	1.0 mg	
Men 19 + years	1.2 mg	
Women 19+ years	1.1 mg	
Pregnancy	1.4 mg	
Breastfeeding	1.4 mg	

Found in: pork, calves liver, whole grains, enriched breakfast cereals, legumes and nuts

People taking strong diuretics (lasix) for congestive heart failure may need extra thiamin as these types of drugs deplete the body of Vitamin B.

Recommend taking a B complex to get recommended daily allowance of 25 – 100 mg of thiamine

VITAMIN B2 (Riboflavin)

VITAMINS

- needed for energy metabolism, supports normal vision and healthy skin
- may prevent cataracts and migraines

AGE	RDA	DAILY UPPER LIMITS
1 – 3 years	0.5 mg	<i>None established</i>
4 – 8 years	0.6 mg	
9 – 13 years	0.9 mg	
Boys 14-18 years	1.3 mg	
Girls 14-18 years	1.0 mg	
Men 19 + years	1.3 mg	
Women 19+ years	1.1 mg	
Pregnancy	1.4 mg	
Breastfeeding	1.6 mg	

Found in: milk, yogurt, cottage cheese, fortified soy and rice beverage, meat, whole grains, and enriched breakfast cereals.

Supplements:

- 400 mg taken once daily may reduce frequency of migraine attacks
- non toxic and well tolerated
- may take up to 3 months to notice improvement

VITAMIN B3 (Niacin)

- needed for energy metabolism, maintains healthy skin and digestive tract while supporting nerve function
- may lower high blood cholesterol and may prevent Type 1 diabetes in children

AGE	RDA	DAILY UPPER LIMITS
1 – 3 years	6 mg	10 mg
4 – 8 years	8 mg	15 mg
9 – 13 years	12 mg	20 mg
Boys 14-18 years	16 mg	30 mg
Girls 14-18 years	14 mg	30 mg
Men 19 + years	16 mg	35 mg
Women 19+ years	14 mg	35 mg
Pregnancy	18 mg	

VITAMINS

AGE	RDA	DAILY UPPER LIMITS
Breastfeeding	17 mg	

Found in: meat, poultry, fish, calves liver, eggs, dairy products, peanuts, almonds, seeds, wheat bran, whole grains, and enriched breakfast cereals.

Supplements:

- high doses can cause liver damage
- when taken in doses higher than 35 mg per day can cause flushing of face, neck and arms
- to prevent this harmless reaction take just after eating a meal or look for the non-flushing ingredient niacinamide

VITAMIN B6 (Pyridoxine)

- body uses this vitamin to form an important enzyme that creates serotonin – a chemical in the brain that has a calming and relaxing effect
- necessary for protein and fat metabolism and production of red blood cells
- may help to prevent heart disease
- may reduce PMS-related depression
- may be useful in treating morning sickness during pregnancy

AGE	RDA	DAILY UPPER LIMITS
1 – 3 years	0.5 mg	30 mg
4 – 8 years	0.6 mg	40 mg
9 – 13 years	1.0 mg	60 mg
Boys 14-18 years	1.3 mg	80 mg
Girls 14-18 years	1.2 mg	80 mg
Men and Women 19-50 years	1.3 mg	100 mg
Men 51+ years	1.7 mg	100 mg
Women 51+ years	1.5 mg	100 mg
Pregnancy	1.9 mg	
Breastfeeding	2.0 mg	

Found in: beef, pork, chicken, salmon, tuna, bran cereal, whole grain cereal, avocado, bananas, potatoes.

Supplements:

- do not exceed 100 mg per day as too much over an extended period of time can be toxic and

VITAMINS

may cause irreversible nerve damage

- people who take Levodopa for Parkinson`s are advised not to take any more than 5 mg per day as it may interfere with the action of the drug

FOLATE (Folic acid) (B9)

- called folate when occurring naturally in foods
- when added in supplements called folic acid
- supports cell division and growth
- body uses it to make DNA and red blood cells
- extremely important for women before and during pregnancy in order to prevent neural tube birth defects in newborns
- may reduce risks of heart disease and breast cancer

AGE	RDA	DAILY UPPER LIMITS
1 – 3 years	150 mcg	300 mcg
4 – 8 years	200 mcg	400 mcg
9 – 13 years	300 mcg	600 mcg
Boys 14-18 years	400 mcg	800 mcg
Girls 14-18 years	400 mcg	800 mcg
Men and Women 19-50 years	400 mcg	1000 mcg
Men 51+ years	400 mcg	1000 mcg
Women 51+ years	400 mcg	1000 mcg
Pregnancy	600 mcg	
Breastfeeding	500 mcg	

Found in: chicken liver, black beans, chickpeas, kidney beans, lentils (all cooked), peanuts, sunflower seeds, artichoke, asparagus, avocado, bean sprouts, beets, brussel sprouts, romaine lettuce, spinach, oranges,

Folic acid and Vitamin B12 need to be taken together. Supplementing with folic acid alone can mask a Vit. B12 deficiency which could lead to irreversible nerve damage.

VITAMIN B12

- Maintains healthy nerve function and necessary for manufacture of DNA and red blood cells
- may reduce risk of heart disease
- beneficial in treatment of male infertility

AGE	RDA	DAILY UPPER LIMITS
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VITAMINS

AGE	RDA	DAILY UPPER LIMITS
1 – 3 years	0.9 mcg	<i>None established</i>
4 – 8 years	1.2 mcg	
9 – 13 years	1.8 mcg	
14 - 18 years	2.4 mcg	
19 - 50 years	2.4 mcg	
51+ years	2.4mcg	
Pregnancy	2.6 mcg	
Breastfeeding	2.8 mcg	

Found in: all animal food, including shellfish, dairy, some soy and rice beverages.

Supplements:

- anyone over the age of 50 needs to be supplementing with Vit B12
- up to one third of older adults produce inadequate amounts of stomach acid and therefore can no longer properly absorb B12 from food (stomach acid is needed to release the vitamin from food proteins) Also any one taking medications needs B12

BIOTIN

- needed for energy metabolism
- used to synthesize fat, amino acids and glycogen (the form in which your body stores carbohydrates)

AGE	RDA	DAILY UPPER LIMITS
1 – 3 years	8 mcg	<i>None established</i>
4 – 8 years	12 mcg	
9 – 13 years	20 mcg	
14 - 18 years	25 mcg	
19 - 50 years	30 mcg	
51+ years	30 mcg	
Pregnancy	30 mcg	
Breastfeeding	35 mcg	

Found in: kidney, calf's liver, clams, oatmeal, whole grains, egg yolks, soybeans, nuts, brewer's yeast, cauliflower, mushrooms and bananas. It is also produced from bacteria in our intestinal tract which most get all the biotin they need from this source.

VITAMINS

Supplementation: there is little evidence to support taking supplemental biotin and most will get 50 - 100 mcg from a high potency multivitamin/multimineral source.

PANTOTHENIC ACID

- used to metabolize fat and carbohydrates for energy
- Used to make bile, a digestive aid, as well as hormones, neurotransmitters, red blood cells and vitamin D.
- Involved in more than 100 steps in the body's production of above plus iron-carrying compound called haemoglobin.
- Also important part of co-enzyme A, an essential compound used by the cells to generate energy

AGE	RDA	DAILY UPPER LIMITS
1 – 3 years	2 mg	<i>None established</i>
4 – 8 years	3 mg	
9 – 13 years	4 mg	
14 - 18 years	5 mg	
19 + years	5 mg	
Pregnancy	6 mg	
Breastfeeding	7 mg	

Found in: brewer's yeast, calves liver, meat, fish, poultry, peanuts, soybeans, split peas, nuts, seeds, lentils, whole grains, buckwheat, oatmeal and mushrooms.

Supplements:

- deficiency is rare
- most high potency multivitamin/mineral supplements provide 10 – 100 mg

CHOLINE

- not considered a true vitamin
- needed for fat metabolism and maintain healthy nerve function
- used to make cell membranes and acetylcholine, a neurotransmitter involved in memory

VITAMINS

AGE	RDA	DAILY UPPER LIMITS
1 – 3 years	200 mg	1000 mg
4 – 8 years	250 mg	1000 mg
9 – 13 years	375 mg	2000 mg
Boys 14-18 years	550 mg	3000 mg
Girls 14-18 years	400 mg	3000 mg
Men 19 + years	550 mg	3500 mg
Women 19+ years	425 mg	3500 mg
Pregnancy	450 mg	
Breastfeeding	550 mg	

Found in: egg yolks, calves liver, kidney, meat, brewer's yeast, wheat germ, soybeans, peanuts, green peas

Supplements:

- consider taking choline with lecithin and phosphatidylserine if not eating enough in foods
- not all multis contain choline
- high doses may cause a fishy body odor and sweating
- people with liver, kidney or Parkinson's disease, as well as those who suffer from depression are at greater risk for adverse effects associated with high intakes of choline from supplements.

There are many vitamins found within the B-Complex, including B1, B2, niacin, pantothenic acid, B6, B12, folic acid, B13, B15, B17, choline, inositol, biotin and PABA. It's not necessary to remember all of them but it is important to recognize that they play a critical role in many of our bodily functions. Our glands require one or more of the B-complex vitamins to manufacture proper hormones, which can play a role in many of our emotions. Without adequate quantities we become more susceptible to stress, depression, anxiety, or irritability. B-complex vitamins are necessary for adequate energy, learning capacity, growth, immunity, reproduction, pain reduction, or proper pain signals, wound healing memory and glandular and nervous system function.

Symptoms of a B-complex Vitamin Deficiency:

Anaemia, fatigue or weakness
 Anxiety, irritability, or nervousness
 Cold sores or canker sores in the mouth
 Depression, anxiety or irritability
 Dizzy or light-headed when standing up
 Dry hair, split ends, or abnormal hair loss
 Fleeting pains or tenderness in joints or legs
 Forgetfulness or short attention span
 Frequent colds, flu or other infections
 Hang nails or cuticles that tear easily

VITAMINS

Headaches
Heart palpitations or slow or rapid heartbeat
High blood pressure
Insomnia or difficulty staying asleep
Irregular heartbeat
Lack of endurance or fatigue easily
Muscle cramps in legs, especially after exercising
Prematurely aging skin or wrinkling
Rapid heartbeat with slightest exertion
Restless leg syndrome
Shortness of breath or chest pains
Skin bruises easily
Skin is itchy, red or inflamed (dermatitis)
Weight loss or loss of appetite
White skin patches

Women: Acne or swelling is worse during periods, menstrual problems, and morning sickness during pregnancy

VITAMIN C (ASCORBIC ACID)

- water-soluble that supports collagen synthesis and wound healing, strengthens blood vessels, and helps body to absorb iron
- antioxidant powers may prevent heart disease, cataracts, and macular degeneration
- may prevent osteoporosis
- supports the body's immune system to lessen severity and duration of the common cold.

AGE	RDA	DAILY UPPER LIMITS
1 – 3 years	15 mg	400 mg
4 – 8 years	25 mg	650 mg
9 – 13 years	45 mg	1200 mg
Boys 14-18 years	75 mg	1800 mg
Girls 14-18 years	65 mg	1800 mg
Men 19 + years	90 mg	2000 mg
Women 19+ years	75 mg	2000 mg
Pregnancy	85 mg	
Breastfeeding	120 mg	

***note: smokers need an additional 35 mg / day**

Found in:

VITAMINS

FOOD	AMOUNT	RECEIVE
Cantaloupe	¼ medium	56 mg
Orange	1 medium	70 mg
Orange juice, fresh	1 glass (250 ml)	131 mg
Grapefruit, red or pink	½	47 mg
Kiwi	1 large	68 mg
Mango	1	49 mg
Strawberries	1 cup raw	89 mg
Broccoli	1 spear raw	141 mg
Brussel sprouts	½ cup cooked	50 mg
Cauliflower	½ cup raw	38 mg
Potato	Baked with skin	27 mg
Red pepper	½ cup raw	95 mg
Tomato juice	1 cup	47 mg

Supplements:

- if you do not eat at least 2 vit C-rich foods a day, taking a supplement is a good idea
- “ester C” is more bio-available to the body
- if you choose a chewable, make sure it contains calcium ascorbate or sodium ascorbate which are less acidic to the enamel on teeth
- research has shown that the body can only use about 200 mg at a time, so take time release or take doses throughout the day – 500 mg size may be more advantageous than 1000 mg (unless time released)
- people with history of kidney stones or kidney failure should limit intake to 100 mg / day

Symptoms of a Vitamin C Deficiency:

Anaemia
 Excessive hair loss
 Exhaust easily
 Fragile bones
 Frequent nosebleeds
 Gums bleed easily, especially when brushing or flossing teeth
 Premature aging of skin
 Prone to catching cold, flu, or other infections easily
 Skin bruises easily
 Sores, wounds, or infections heal slowly

VITAMIN D

- regulates body calcium and phosphorus levels and helps intestines to absorb these minerals

VITAMINS

- by maintaining bones and teeth, it helps to prevent osteoporosis
- most vit D comes from sunlight – when ultra-violet light hits our skin, it forms a pre-vitamin D – then makes its way to the kidneys where it is transformed into active vit D
- SPF sunscreens block synthesis of vit D
- need to expose hands, face and arms to sunshine for a minimum of 15 - 20 minutes 2 -3 times a week (not hottest times) without sunscreen

AGE	RDA	DAILY UPPER LIMITS
1 – 3 years	200 IU (5 mcg)	2000 IU (50 mcg)
4 – 8 years	200 IU (5 mcg)	
9 – 30 years	200 IU (5 mcg)	
31 - 50 years	200 IU (5 mcg)	
51 - 70 years	400 IU (10 mcg)	
71 + years	600 IU (15 mcg)	
Pregnancy	200 IU (5 mcg)	
Breastfeeding	200 IU (5 mcg)	

Found in: liver of chicken, pork, beef, cod, herring, mackerel, salmon, sardines, shrimp, milk, soy, rice beverages, egg, butter, margarine

Supplements:

If you take a calcium supplement, choose a product with vitamin D added

Symptoms of a Vitamin D Deficiency:

Bow legs or knock knees (rickets)
Burning in mouth or throat
Constipation
Dental cavities or cracked teeth
Insomnia
Joint pain or bone pain
Muscle cramps
Nearsightedness or myopia
Nervousness
Osteomalacia
Osteoporosis
Poor bone development

VITAMIN E (ALPHA TOCOPHEROL)

- antioxidant that protects cell membranes and enhances body's immune system

VITAMINS

- necessary for iron metabolism and to protect polyunsaturated fats in the body and vitamin A from oxidation (free radical damage)
- may help prevent heart disease, prostate cancer and slow the progression of Alzheimer's disease

AGE	RDA	DAILY UPPER LIMITS
1 – 3 years	9 IU (5 mg)	<i>1500 IU (1000 mg)</i>
4 – 8 years	10 IU (5 mg)	
9 – 13 years	16 IU (5 mg)	
14 – 18 years	22 IU (15 mg)	
19 – 30years	22 IU (15 mg)	
31 - 50 years	22 IU (15 mg)	
51 - 70 years	22 IU (15 mg)	
71 + years	22 IU (15 mg)	
Pregnancy	22 IU (15 mg)	
Breastfeeding	28 IU (19 mg)	

Found in: vegetable oils, almonds, peanuts, soybeans, whole grains, wheat germ, wheat germ oil, avocado and green leafy vegetables, especially kale

Supplements:

- 200 to 800 IU a day – no evidence to support taking more
- buy a natural source – d-alpha-tocopherol or mixed tocopherols – preferred by the liver
- gamma-tocopherol has anti-inflammatory effects in addition to antioxidant properties which can play a role in cancer prevention
- DO NOT take without MD's knowledge if taking blood thinning meds like Coumadin – has anti-clotting properties

Symptoms of a Vitamin E Deficiency:

Anaemia

Blood clots or tendency to form blood clots

Celiac disease

Cystic fibrosis

Dry hair, split ends or hair falling out

Eye twitching

Men: impotence or low sex drive

Muscle weakness, or swelling or loss of muscle mass

Poor coordination

Women: menstrual pain

VITAMIN K

VITAMINS

- essential for blood clotting
- plays important role in formation of new bone and may help prevent osteoporosis
- associated with lower risk of hip fractures

AGE	RDA	DAILY UPPER LIMITS
1 – 3 years	30 mcg	<i>None established</i>
4 – 8 years	55 mcg	
9 – 13 years	60 mcg	
14-18 years	75 mcg	
Men 19 + years	120 mcg	
Women 19+ years	90 mcg	
Pregnancy	90 mcg	
Breastfeeding	90 mcg	

Found in: green peas, broccoli, spinach, leafy green vegetables, brussel sprouts, romaine lettuce, cabbage and calves liver. Bacteria in the intestines also produce Vitamin K.

Supplements:

- DO NOT take without MD's knowledge if taking blood thinning meds like Coumadin or Heparin– has anti-clotting properties
- research is showing that Vitamin K helps the bones by reducing the amount of calcium lost through urine