

Selenium(____)

Useful for:

-

Glutathione peroxidase:

Toxic Overdose:

Deficiencies:

Selenium (Se)

Useful for:

- show to be powerful cancer preventative substance

Toxic Overdose: can be toxic above 600mcg (therapeutic dose is 200mcg)

Glutathione peroxidase: Body's most common naturally occurring antioxidant. Requires selenium.

Deficiencies: Only occur in China where soil is deficient in selenium. Related to heart disease.

Copper()

Functions to:

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Foods with good copper content:

Wilson's Disease:

Ratio of copper to zinc:

Good food source:

-
-
-
-
-

Copper (Cu):

Functions to:

- Keeps the heart and vessels healthy by making an enzyme that keeps them flexible.
- Involved in the production of myelin.
- Works with iron in the red blood cells
- Superoxide dismutase (SOD) – a naturally occurring antioxidant in the body. It needs copper for its production.

Foods with good copper content:

Wilson's Disease – An inherited disease where the patient does not have the ability to get rid of the extra copper. Leaving it to build up in the body. It's a genetic, not toxic disease. The problem is that it builds up in the brain and eyes.

Copper and zinc should be taken in the proper proportions, which are: 1 part copper to 10 parts zinc (ratios for calcium, potassium, and magnesium Ca = K = .5 magnesium)

Good Food Sources:

- shellfish
- nuts
- potatoes
- beans
- peas

Zinc (___)

Functions:

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-

Deficiencies are found:

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Thing hyped for, but doesn't treat:

Best food source:

Good choices for supplementation include:

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-
-
-

Zinc (Zn)

Functions:

- Involved with the action of at least 200 different enzymes
- One of these enzymes is alcohol dehydrogenase. It's the enzyme that breaks down alcohol. Deficiency of this enzyme causes you to get drunk on minimal amounts of alcohol.

Today no one has a real deficiency but slight deficiencies may be found with:

- Vegans
- people on high fiber diets (it carries the zinc right out of the body)
- the elderly
- people who smoke and drink

What is the big thing hyped thing is does not treat? Hair loss does seem to treat healthy sperm and male hormones

The best food source source should be no surprise: oysters (raw contains more)

If taking a supplemental, four good choices are:

- Zinc gluconate
- Zinc picolonate
- Zinc Citrate
- Zinc monomethionate

Zinc sulfide will upset your stomach, and zinc oxide is useful topically.

Zinc deficiency discovered in late 1800's in Egypt amongst poor boys who ate nothing but unleavened bread and were short and underdeveloped.

Zinc seems used (22mg per lozenge) every two hours for no more than two days. Don't chew! Increases size/activity of thyroid

Fluoride (___)

Trace mineral that:

It's a trace mineral because:

Average American:

Fluoride(F)

This is a trace mineral that you don't need but are forced to take because it in most of our drinking water.

Uncle Sam tells us that this is a trace mineral.

Average American consume 4mg/day

Manganese (___)

Too much Mn:

Functions:

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-
-

Good food sources:

-
-
-
-
-

Manganese (Mn)

Too much Mn: interferes with iron absorption

Functions:

- To make connective tissue
- helps clot blood
- move glucose around the body

Good food source:

- tea
- raisins
- pineapple
- nuts
- oranges

Molybdenum (___)

Need for:

General Consumption:

Deficiencies:

Cobalt (___)

If you are getting enough:

Molybdenum (Mo)

Needed for: a number of enzymes and Fe utilization

General consumption: 40 – 500 mcg/day

Deficiency: Cancer of the cancer of the esophagus where the soil has no Mo. Only in China.

Cobalt:

Cobalt (Co)

Part of B12, if you're getting that, you have enough.

Other Trace Minerals:

Boron (B):

Nickel (Ni):

Silicon (Si):

Tin (Sn):

Vanadium(V):

Minerals you Do not need to supplement

-
-
-
-

Other Trace Minerals:

Boron (B): helps absorb calcium. Good sources include fruits, nuts, beans 2-5mg/day

Nickel (Ni): nobody knows what it is doing in our bodies.

Silicon (Si): needed in the making of bones and other connective tissue. Nobody has ever been found deficient

Tin (Sn): Nobody knows about this

Vanadium(V): There is known known need for V, despite the claims of curing diabetes.

Minerals you Do not need to supplement:

- Aluminum (Al)
- Cadmium (Cd)
- Arsenic (As)
- Lead (Pb)
- Mercury (Hg)

Safe Values

Bones (Ca : P : Mg ratio)

Calcium (Ca):
Phosphorus (P):
Magnesium (Mg):

Electrolytes:

If these are messed up, you are a medical emergency.

Sodium (Na):
Potassium (K):
Chloride (Cl):

Trace Elements

Those needed in milligrams

Zinc (Zn):
Iron (Fe):
Copper (Cu):
Manganese (Mn):

(Copper to Zinc ratio)

Those measured in micrograms

Iodine (I):
Selenium (Se):
Chromium (Cr):
Molybdenum (Mo):

Safe Values

Bones 1Ca: 1P : .5 Mg

Calcium (Ca): 1500mg
Phosphorus (P): 1500mg
Magnesium (Mg): 750mg (mother's milk is three to one, it is easy to get toxic with this)

Electrolytes:

If these are messed up, you are a medical emergency.

Sodium (Na): nothing (maximum 2400mg) (minimum of 500mg – not a problem)
Potassium (K): nothing (maximum 3500mg)
Chloride (Cl): nothing (maximum 3400mg)

Trace Elements

Those needed in milligrams

Zinc (Zn): 25mg
Iron (Fe): 15mg (if not pregnant)
Copper (Cu): 3 mg
Manganese (Mn): 5 mg

(1 Cu : 10 Zn)

Those measured in micrograms

Iodine (I): 200mcg
Selenium (Se): 150mcg
Chromium (Cr): 120mcg
Molybdenum (Mo): 50mcg

Vitamins

Vitamin:

Essential:

Some essential nutrients:

To be essential:

Vitamins are lettered/numbered:

-
-

The B's are put together:

Modern definition of vitamins:

Fat Soluble:

Water Soluble:

How many vitamins are there to remember:

Vitamins

Vitamin: an organic nutrient essential to the body

Essential: To be essential, it must be shown that - the lack of a particular nutrient will cause a person to suffer from a specific disease.

Some essential nutrients: have never been shown to cause a deficiency disease, however the lack of a particular nutrient will cause a lab animal to suffer from a particular disease.

To be essential, it cannot be made in the body: If it is made in the gut, it's not technically made in the body.

Vitamin K, for example is produced in the colon.

Vitamins are lettered/numbered:

- By the order in which they are discovered.
- Omissions because what they discovered didn't pan out, and they never reuse numbers/letters (mostly)

The B's are put together: because they are all needed in the utilization of the macronutrients.

Modern definition of vitamins: described as organic compounds needed in small amounts that help make enzymes and hormones that the body needs for proper metabolism.

Fat Soluble: A, D, E, & K

Water Soluble: C and the B family

How many vitamins are there to remember: 13

Vitamin A

Retinol -

It was also dubbed Vit A:

There are three retinoids:

-
-
-

Because retinoids can be used directly by the body:

Carotenes are known as:

The most active is:

Another, less effective is:

1 Retinol equivalent (RE) = 5 IU

IU – a measure of biological activity.

Vitamin A has a special relationship with epithelial tissue.

Vitamin A

Retinol - to reflect vitamin A's affect on the retina. (As an anti-infective agent)

It was also dubbed Vit A: because it was the first of these mysterious substances to be isolated.

There are three retinoids: Various types of vitamin A that come from animal products.

- retinol
- retinaldehyde
- retinoic acid

Because retinoids can be used directly by the body: they are also called preformed vitamin A.

Carotenes are known as: Vitamin A precursors or provitamin A

The most active is beta-carotene.

Another, less effective is alpha carotene.

1 Retinol equivalent (RE) = 5 IU

IU – a measure of biological activity.

Vitamin A has a special relationship with epithelial tissue.

Vitamin A (Cont)

The carotenes that you get from plant sources:

Unlike preformed vitamin A's, carotenes have two strong points going for them:

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-

Beta cerotene vs alpha carotene:

Alpha carotene, while not as good as a Vit A precursor, is much more effective an:

The daily requirement for (beta carotene)

Two types of Vitamin A supplements are:

-
-

Cod liver oil –

To get your A's in the form of carotene, make sure your supplement contains:

Vitamin A (Cont)

The carotenes that you get from plant sources. **Only about 40% is converted to Vitamin A.**

Unlike preformed vitamin A's, carotenes have two strong points going for them:

- You can't overdose on carotenes, they are water soluble.
- Carotenes are super antioxidants

Beta cerotene is more abundant in our diet and seems to do a better job of acting like Vitamin A.

Alpha carotene, while not as good as a Vit A precursor, is much more effective an: an antioxidant in the body.

The daily requirement for (beta carotene) is 6mg per day

Two types of Vitamin A supplements are:

- Retinol
- Retinyl Palmitate – better for patients with intestinal problems.

Cod liver oil – not that good due to possibility of rancidity.

To get your A's in the form of carotene, make sure your supplement contains: Mixed caratonoids.

Vitamin C

Functions include:

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-
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Almost all other animals make Vit C:

Vit C deficiencies leads to the disease:

Symptoms of scurvy include:

Vitamin is also called:

It takes only a few weeks of Vitamin C deficiency:

A major source of Vit C in supplements comes from the:

Chewable tablets generally contain 250 mg:

Sodium ascorbate:

Calcium ascorbate

Potassium ascorbate:

Ascorbic Acid Crystals:

Linus Pauling's finding

The does needed for any benefit seems to be in the range of

Vitamin C

Functions include:

- making healthy connective tissue
- speeding up production of new cells in injured tissue (remember the role of reticular CT/basement membranes and epithelial cells)
- may be the best of the vitamin antioxidants

Almost all other animals make Vit C: We, must get it in our foods. Specifically plant foods.

Vit C deficiencies leads to the disease: of Scurvy.

Symptoms of scurvy include: bleeding gums, slow wound healing

Vitamin is also called: ascorbic acid

It takes only a few weeks of Vitamin C deficiency: to lead to the symptoms of scurvy.

A major source of Vit C in supplements comes from the: acerola berry. It contains - 1644 mg of Vit C per cup.

Chewable tablets generally contain 250 mg. The problem with the chewable tablets is that the acid damages your teeth.

Calcium ascorbate and the above mentioned sodium ascorbate are available for patients bothered by too much acid in the stomach like those with ulcers.

Sodium ascorbate: is finefor vitamin C, but adds too much sodium to our diets

Potassium ascorbate – one teaspoon has enough potassium to kill a child or small adult.

Ascorbic Acid Crystals – use just a pinch, 4000mg of Vitamin C per teaspoon.

Linus Pauling's finding that it will prevent the common cold

The does needed for any benefit seems to be in the range of 2-3grams per day

Vitamin D

Vit D has, as a major function:

Deficiency Disease is

Rickets:

The adult version of Vit D deficiency is the disease osteomalacia –

When sunlight hits your skin:

How much sunlight is needed?

One mcg =

Calciferol:

Vitamin D3:

The type you get from food:

The type of D2 you once got is:

- Two other names used are:

Anything called fortified milk has:

Vitamin D

Vit D has, as a major function: the ability to enhance the absorption of calcium and directed to do calcium type things.

Deficiency Disease is Rickets

Rickets: Where the bones are bowed and deformed even with enough calcium in the diet. Because of the inability of the calcium to be incorporated into the bone.

The adult version of Vit D deficiency is the disease osteomalacia – which means soft bones.

When sunlight hits your skin there is a type of cholesterol in your skin that gets activated, and through a number of steps gets turned into Vitamin D.

How much sunlight is needed? 2 hours of winter sun, or 10 minutes of summer sun. On your face per day will theoretically take care of your needs.

One mcg = 40 IU's

Calciferol – the general name for anything that is called vitamin D.

Vitamin D3: The type that is made by the body, also called cholecalciferol.

The type you get from food is Vitamin D2.

The type of D2 you once got in ergot was called ergocalciferol. It's still called this today

- Two other names are used: calcifidiol, or calcitol. They are slightly different chemically.

Anything called fortified milk has 400 IU's of added Vit D per quart.

Tissues & Vitamins

Vita A –

Vita C –

Vita D –

Tissues and Vitamins

Vita A – epithelial tissue

Vita C – connective

Vita D – bone

Vitamin E

Vitamin E acts as:

Vitamin E's specialty seem to be:

The big three of the antioxidant vitamins are -

The antioxidant function of Vit E may be the reason:

Vit E was first isolated in:

They called this substance:

Two branches to the Vit E family

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-

There are four tocopherols:

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-
-
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The most common and most active in it's ability to destroy free radicals is

Requirements are expressed in terms of alpha tocopherols

Vitamin E

Vitamin E acts as: a major antioxidant

Vitamin E's specialty seem to be protecting cell membranes against free radical damage.

The big three of the antioxidant vitamins are - Vita min E, C, and A in the form of carotene's.

The antioxidant function of Vit E may be the reason it has been proven to be of benefit in treating such things as: heart disease, cancer, immune system problems, and diabetes.

Vit E was first isolated in 1922. Lab rats fed a diet of highly process foods were unable to have offspring. A substance was then isolated that seemed to be the missing substance in refined foods that enabled rats to become fertile again.

They called this substance – tocopherol. The work is greek and seems to translate to: to bear offspring.

Two branches to the Vit E family

- tocopherols
- tocotrienols

There are four tocopherols:

- alpha
- beta
- gamma
- delta

The most common and most active in it's ability to destroy free radicals is – alpha

Requirements are expressed in terms of alpha tocopherols which are called tocopherol equivalents (TE).

Vitamin E (Cont)

There are also four tocotrienols:
The tocotrienols have a special value:
Vit E activity can also be expressed:
While Vitamin E is not that common in our food:
We should get about:
The problem is that the recommended amount is:
Natural vit e supplements are made from:
Make sure that you are getting the best one:
The mineral selenium seems to make:
Vitamin E has been documented with heart attack to:
To get this benefit requires an intake of :
Vit E & Alzheimer's:
Other indications may include

Vitamin E (Cont)

There are also four tocotrienols designated alpha, beta, gamma, delta.
The tocotrienols have a special value in cancer preventative functions and seem to help keep cholesterol levels down.
Vit E activity can also be expressed in IU and Mg.
1 mg = 1.49 IU's

While Vitamin E is not that common in our food, everyone gets the recommended amount.
The problem is that the recommended amount is way too low. It's probably something we need to supplement.
We should get about: 100IU, and to get that you are likely to need a supplement
Natural vit e supplements are made from vegetable oils.
Twice as expensive, but twice as effective.
Make sure that you are getting the best one, buy one that has all or most of the different forms of Vitamin E.
The mineral selenium seems to make vitamin E work better and some forms of Vit E have added selenium.
Vitamin E has been documented with heart attack to: Help prevent and is generally good for healing the heart after a heart attack.
To get this benefit requires an intake of 400-800 IU's.
Vit E seems to help slow down the progression, but not the onset of Alzheimer's.
Other indications may include: tx for benign breast disease, diabetes, vision problems, and intermittent claudication

Vitamin K

It's function is for:

The three types of vitamin K

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-
-

In addition to being needed in the clotting of blood:

Vitamins and bones:

- Vit D –
- Vit K –

Vitamin K needed:

Vit K deficiencies and hemophilli:

Vitmin K is needed in the production of the clotting factors:

In some states, Vit K is by prescription:

The best food source of Vitamin K:

Vitamin K

It's function is for: blood clotting

The three types of vitamin K1

- K1 – found in foods from plants
- K2 – is made by bacteria in our gut
- K3 – is the synthetic form of Vit K, and is (western) the more active of the other forms.

In addition to being needed in the clotting of blood, Vit K is needed in bone to help bone hold on to calcium.

Vit D – helps bones use calcium

Vit K – helps it stay once it's there.

Vitamin K needed: 1 mcg for each kilogram.

Vit K deficiencies and hemophillia are not related.

Vitmin K is needed in the production of the clotting factors: II, VII, IX, and X

In some states, Vit K is by prescription - - taking extra Vitamin K while taking a blood thinner can be dangerous.

The best food source of Vitamin K: Seaweed

Vitamin B's

All vitamin B's have one thing in common:

Because the B vitamins are needed for energy production

Vitamin B's

All vitamin B's have one thing in common: They are all involved in energy production. They are needed in the utilization of macronutrients for energy

Because the B vitamins are needed for energy production – the quantities required are based on the daily calorie consumption.

Vitamin B1 (Thiamine)

Roots of the name:

Deficiency is associated with the disease:

Three conditions that appear to benefit from increased B1 intake are:

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-
-

Vitamin B1 (Thiamine)

Roots of the name: (greek) thio = sulfur and amine.

Deficiency is associated with the disease: Beriberi. (meaning: "I can't, I can't")

Three conditions that appear to benefit from increased B1 intake are:

- protecting the heart
- helping w/ diabetes
- cancer sores

Vitamin B2 (Riboflavin)

The name means:

Ribflavin was:

Recommended dose: .

Regardless of caloric intake:

Ribflavin

Sunlight

With B2 supplements

Deficiencies are rare with B2:

It may be beneficial:

It is also one of the many antioxidants that may help reduce

Vitamin B2 (Riboflavin)

The name means: ribose and yellow (flavus)

Ribflavin was: Was a yellow/green pigment isolated in milk before it was recognized as a vitamin.

Recommended dose: .6 mg per 1000 calories

Regardless of caloric intake: you should never consume less than 1.2 mg per day.

Ribflavin is an exception to the water soluble vitamins in that it can be stored in small amounts in the body.

Sunlight destroys B2.

With B2 supplements you may only absorb 15% of the vitamin

Deficiencies are rare with B2, but if you are elderly or a strict vegan you may need a supplement.

It may be beneficial: with extra heavy workouts or in doses of 400mg for migraine relief

It is also one of the many antioxidants that may help reduce age related vision loss.

Vitamin B2 (Niacin)

The disease associated with B3 deficiency:

Comes in at least two forms:

-
-

When you eat protein:

This disease present with the three D's of:

-
-
-

Vitamin B3 (Niacin)

The disease associated with B3 deficiency is pellagra.

Comes in at least two forms:

- nicotinic acid
- niacinamide – most often found in supplements

When you eat protein: about half of the tryptophan goes into making B3, but the RDA ignores this and only lists what you get in preformed food.

This disease present with the three D's of:

- Dermatitis
- Dementia
- Diarrhea