

Fat Soluble Vitamins


Essential for Growth, Vitality and Health

A Short History of Scurvy

- 5th Century B.C. – Hippocrates first described scurvy as bleeding gums and hemorrhaging leading to death.
- 1593 – Sir Richard Hawkins recommended “sower” (sour) oranges and lemons for scurvy.
- 1747 – 150 years later, Dr. James Lind “discovered” that men with scurvy given oranges and lemons recovered “quite swiftly”.
- 1770 – The British Navy recommended that ships carry sufficient lime juice for all aboard. **In the 200 years between 1600 and 1800 nearly 1,000,000 men died of an easily preventable disease!**
- 1928 – Scientists determined that Vitamin C (ascorbic acid) was the substance in citrus fruits that prevented scurvy.

More Vitamin History

- 1911 – A Polish chemist discovered the substance in unpolished rice that prevented beriberi. He named it “vital amine” --- later shortened to “vitamin”.
- By the end of the 1930’s, **“ALL the vitamins were named and classified!”** (but many more possible vitamins were later discovered!)
- As recently as 1998 – Choline was named the newest member of the B vitamin family.
- There is much disagreement among the “experts” about what is and is not a “vitamin”. B4, B8, B10, B11, B13, B14, B15, B16, B17, B22, Bh, Bt, and Vitamins F, G, H, I, J, L1, L2, N, P, Q, T, U, and V are all in dispute.



**What have you
been told about
nutrition----
and is it
CORRECT?**

Which Is More Nutritious?

Liver and Onions

- 6 oz. beef liver fried in
- 1 tablespoon bacon grease
- Along with 1 cup of sliced onions

Chicken Meal

- 6 oz. skinless chicken breast
- ½ cup brown rice
- ½ cup cooked spinach
- Small whole wheat dinner roll
- 1 tablespoon margarine

Calories, Fat, Carbs, Protein

Liver & Onions

- 595 calories
- 26 grams fat
- 36 grams carbs
- 53 grams protein

Chicken Meal

- 607 calories
- 22 grams fat
- 41 grams carbs
- 60 grams protein

Nutrients (RDA)

Liver & Onions

- 2453% Vitamin A
- 35% Vitamin E
- 87% Vitamin C
- 46% Thiamin
- 350% Riboflavin
- 88% Vitamin B-6
- 4301% Vitamin B-12
- 104% Niacin
- 108% Folate
- 106% Iron
- 77% Zinc
- 189% Selenium
- 90% Phosphorus
- 16% Magnesium

Chicken Meal

- 117% Vitamin A
- 55% Vitamin E
- 21% Vitamin C
- 36% Thiamin
- 42% Riboflavin
- 87% Vitamin B-6
- 24% Vitamin B-12
- 185% Niacin
- 34% Folate
- 47% Iron
- 27% Zinc
- 120% Selenium
- 77% Phosphorus
- 53% Magnesium

Which Is More Nutritious?

Cheese Omelet

- 3 eggs fried in
- 1 tablespoon butter
- Topped with 1 slice of Cheddar cheese
- With 2 tablespoons of fresh salsa

Cereal & Juice

- 8 oz. unsweetened orange juice
- 1 cup cooked oatmeal
- ½ cup skim milk
- 1 tsp. brown sugar
- 1 slice whole wheat toast
- 1 tsp. margarine

Calories, Fat, Carbs, Protein

Cheese Omelet

- 478 calories
- 38 grams fat
- 3 grams carbs
- 29 grams protein

Cereal & Juice

- 495 calories
- 11 grams fat
- 85 grams carbs
- 16 grams protein

Nutrients (RDA)

Cheese Omelet

- 65% Vitamin A
- 25% Vitamin D
- 27% Vitamin E
- 3% Vitamin C
- 11% Thiamin
- 91% Riboflavin
- 18% Vitamin B-6
- 83% Vitamin B-12
- 2% Niacin
- 22% Folate
- 27% Iron
- 23% Zinc
- 104% Selenium
- 25% Calcium
- 66% Phosphorus
- 8% Magnesium

Cereal & Juice

- 19% Vitamin A
- 14% Vitamin D
- 24% Vitamin E
- 165% Vitamin C
- 55% Thiamin
- 37% Riboflavin
- 17% Vitamin B-6
- 21% Vitamin B-12
- 17% Niacin
- 37% Folate
- 32% Iron
- 20% Zinc
- 51% Selenium
- 21% Calcium
- 59% Phosphorus
- 39% Magnesium

A Fabulous "Nutrition" Tool

www.fitday.com

And it's FREE!

Two Types of Vitamins

Fat Soluble

- Vitamin A
- Vitamin D
- Vitamin E
- Vitamin K

Water Soluble

- B1 (Thiamin)
- B2 (Riboflavin)
- B3 (Niacin)
- B5 (Pantothenic Acid)
- B6 (Pyridoxine)
- B7 (Biotin)
- B9 (Folic Acid)
- B12 (Cobalamin)
- Vitamin C

Two Types of Vitamins (Another way of looking at it!)

Food Source Only

- Vitamin A
- Vitamin D*
- Vitamin E
- B1 (Thiamin)
- B3 (Niacin)*
- B6 (Pyridoxine)
- Vitamin C

Food & Intestinal Bacteria

- Vitamin K
- B2 (Riboflavin)
- B5 (Pantothenic Acid)
- B7 (Biotin)
- B9 (Folic Acid)
- B12 (Cobalamin)

* May be produced by bacteria

Vitamin Deficiency Diseases

Food Source

- Vitamin A – Night Blindness
- Vitamin D - Rickets
- Vitamin E - Infertility
- B1 (Thiamin) - Beriberi
- B3 (Niacin) - Pellegra
- B6 (Pyridoxine) - Anemia
- Vitamin C - Scurvy

Intestinal Bacteria

- Vitamin K - ?
- B2 (Riboflavin) - ?
- B5 (Pantothenic Acid) - ?
- B7 (Biotin) - ?
- B9 (Folic Acid) - ?
- B12 (Cobalamin) - ?

Thought Question:

Since we don't know the "normal" amount of vitamins produced by our intestinal bacteria, how can we know what the nutritional effects of "deficiency" will be on our bodies if the bacteria are reduced or destroyed?

The Fat Soluble Vitamins

- Vitamin A
- Vitamin D
- Vitamin E
- Vitamin K



Vitamin A

Weston A Price, DDS

- Discovered that the diets of healthy traditional peoples contained at least ten times as much vitamin A as the American diet of his day (1940's).
- Revealed that vitamin A is one of several fat-soluble activators present only in animal fats and necessary for the assimilation of minerals in the diet.
- Noted that the foods held sacred by the peoples he studied, such as spring butter, fish eggs and liver, were exceptionally rich in vitamin A.

Dr. Price considered the fat soluble vitamins, especially Vitamin A, to be the catalysts on which all the other biological processes depend.

Today we know efficient mineral uptake and utilization of water-soluble vitamins do require sufficient Vitamin A in the diet.

Vitamin A Functions


- Essential for good eyesight
- Growth and tissue healing
- Helps protect mucous membranes of mouth, nose, throat and lungs
- Prompts the secretion of gastric juices necessary for digestion of protein
- Helps build strong bones & teeth and rich blood
- Aids in the production of RNA
- Anti-oxidant, lowers cancer risk
- Immune function support

- Foods high in vitamin A are especially important for diabetics and those suffering from thyroid conditions.
- The thyroid gland requires more vitamin A than the other glands and cannot function without it.
- A diet rich in vitamin A will help protect the diabetic from problems with the retina and with healing.

Vitamin A Deficiency

- Night Blindness
- Irritated, reddened or dry eyes
- Decreased protection against infectious agents
- Increased risk of many cancers (breast, cervical, lung, prostate, laryngeal & stomach)
- Fatigue & insomnia

- Dry, bumpy skin, especially on the backs of the arms
- Decreased skin tone, rapid aging of the skin
- Blemishes, acne, or boils
- Mucus membranes are more susceptible to infections and irritants
- Hair may lack luster & dandruff is more likely.

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- Bone softness
 - Abnormal menstruation
 - Decrease in appetite
 - Periodontal disease
 - Kidney stone formation
 - More frequent ear problems

Vitamin A Sources

- Preformed A (Retinol) – Animal
 - Butter, whole milk, cream
 - Egg yolks
 - Liver and fish liver oil
 - Organ meats
 - Shellfish
- Provitamin A (Beta-carotene) - Vegetable
 - Yellow and orange fruits and vegetables
 - Leafy green vegetables

Are you a victim of misinformation about "A"?

Most nutrition books insist that humans can easily obtain vitamin A from fruits and vegetables.

But the transformation of carotene to retinol is rarely optimal. Diabetics and those with poor thyroid function, a group that could include 1/2 the adult US population, cannot make the conversion. Children make the conversion very poorly and infants not at all. They must obtain their precious stores of vitamin A from animal fats.

The label on a can of tomatoes says that tomatoes contain vitamin A, even though the only TRUE SOURCE of vitamin A in the tomatoes is the microscopic insect parts!

- Most of the foods that do provide large amounts of vitamin A---butter, egg yolks, liver, organ meats and shellfish---have all been demonized.
- A low-fat diet hinders the conversion of carotenes to vitamin A. Carotenes are converted by the action of bile salts, and very little bile reaches the intestine when a meal is low in fat.

Vegetarians Beware!

It is VERY UNWISE
to depend completely
on plant sources
for vitamin A!

Vitamin A TOXICITY

- Much debate about this---and disagreement about how much is toxic!
- Some experts claim toxicity only occurs with vegetable supplements (Beta-carotene)
- Others say that toxicity only occurs with animal foods (Retinol)
- The Weston A Price Foundation reminds us that just a few decades ago pregnant women were routinely advised to take cod liver oil daily and eat liver at least once a week. One tablespoon of cod liver oil contains at least 15,000 IU and one serving of liver can contain up to 40,000 IU vitamin A.



Vitamin D

Vitamin D Sources

- **SUNLIGHT**
 - Cod liver oil
 - Egg yolks
 - Butter
 - Liver
 - Oily fish (salmon, sardines, herring)
- Note: Vitamin D2 (derived from plants) does not have all the same functions as the cholesterol-based vitamin D3.**

Eating Fish While Pregnant?

- Please read your handout!!
- This demonstrates that when we get medical “advice” that contradicts generations and generations of cultural traditions, the “advice” is probably

WRONG!!!

Vitamin D Functions

- Regulates calcium metabolism and normal calcification of the bones and teeth
- Influences the body's use of phosphorus
- If D is low, blood levels of calcium and phosphorus decrease, and the body pulls these minerals from the bones.

Vitamin D Deficiency

- Chronic pain
- Chronic kidney disease
- Crohn's disease
- Hyperparathyroidism
- Osteoporosis, osteopenia, osteomalacia
- Rickets
- Nearsightedness and loss of hearing

Vitamin D Toxicity

- Vitamin D in all forms can be toxic in pharmacological doses.
- If in doubt, have your blood levels of vitamin D tested.
- Historically, vitamin D requirements were satisfied by daily exposure to sunlight and/or daily intake from food.
- Lowfat diets and lack of seafood in the diet further contribute to the current worldwide insufficiency of vitamin D.

Symptoms of Vitamin D Toxicity

- Excessive thirst
- Diarrhea
- Nausea
- Weakness
- Headaches
- Abnormal calcification of soft tissues

The Marshall Protocol

- A treatment for sarcoidosis (sar"koi-do'sis) --- NOT recommended by this group for treatment of fibromyalgia!
- Sarcoidosis involves inflammation that produces tiny lumps of cells in various organs in your body. The lumps are called granulomas because they look like grains of sugar or sand. They are very small and can be seen only with a microscope.
- These tiny granulomas can grow and clump together, making many large and small groups of lumps. If many granulomas form in an organ, they can affect how the organ works. This can cause symptoms of sarcoidosis.
- Treatment involves taking low dose antibiotics for years, along with complete avoidance of vitamin D and sunshine.



Vitamin E

Vitamin E Sources

- Cold pressed (unrefined) vegetable oils
- Butter
- Organ meats
- Grains
- Nuts, Seeds
- Legumes
- Dark green leafy vegetables

Vitamin E Functions

- Antioxidant
- Protects against free-radical damage
- Reduces platelet aggregation and adhesiveness—better than aspirin
- May reduce menopausal problems
- Has been used for kidney & liver diseases
- Anti-inflammatory (bursitis, gout, and arthritis)

Vitamin E Deficiency

- No clear deficiency disease in humans
- Infertility was shown in rat studies
- Recent research: Nerve dysfunction near the hands and feet (peripheral neuropathy) and links between pain, tingling, and loss of sensation in the arms, hands, legs, and feet.

Vitamin E Toxicity

- Toxicity is unlikely
- Large doses should be avoided by people with high blood pressure
- May reduce blood clotting



Vitamin K

Vitamin K Sources

- Food source is K1
- Intestinal bacteria is K2
- Yogurt, kefir and cultured fruits and vegetables may increase the intestinal flora
- Antibiotics that kill the intestinal bacteria will reduce the synthesis of vitamin K in the colon
- Rancid oils & fat, radiation, aspirin, and freezing of foods all destroy vitamin K.

Vitamin K Functions

- Blood clotting
- Important role in bone formation
- Helps prevent bone loss
- Salicylates, such as aspirin, increase the need for vitamin K

Vitamin K – Deficiency

Since Vitamin K Regulates Calcium -

Deficiency May Cause

- Calcification of arteries and other soft tissues
- Heart Disease
- Alzheimer's Disease (Vit. K prevents abnormal calcium accumulation in the brain)
- Bone loss
 - Osteopenia
 - Osteoporosis
 - Fractures
 - Scoliosis

Vitamin K may also prevent:

- Stroke
- Inflammation
- Blood clots
- Heavy menstrual periods
- Nosebleeds
- Hematuria (blood in the urine)
- Gastrointestinal bleeding
- Eye hemorrhages
- Bleeding gums
- Purpura/Easy Bruising

Vitamin K Toxicity

- Toxicity rarely occurs from natural sources (food and intestinal bacteria)
- Toxic side effects are more likely from the synthetic vitamin K used in medical treatments

Recent Vitamin Research

- Vitamins do not exist as single components but as parts of a complex of compounds which work together synergistically.
- Most vitamins produce optimum results in the presence of “cofactors” such as trace minerals, enzymes and coenzymes, as well as other vitamins.

What does that mean?

**The Best Source
Of Vitamins
Will Always Be
Properly Prepared**

WHOLE FOODS!

The future of vitamins?

- It is estimated that there may be thousands of food-based substances essential to our health.
- How many more will eventually be “discovered”?
- What will be the effects of genetically modified food?
- What more will we learn about therapeutic dosages?
- How might genetic testing enable specific nutritional treatments?

What Are the **Super Foods**?

- Liver and organ meats
- Egg yolks
- Butter, cream
- Whole milk & cultured milk products
- Fish
- Shellfish (crab, scallops, shrimp, oysters)
- Cod liver oil, brewer's yeast, wheat germ
- Yellow & orange fruits and vegetables
- Leafy green vegetables
- Whole grains and sprouted grains
- Nuts, seeds, legumes
- Avocados, bananas, prunes
- Garlic, mushrooms, berries