

## Fat Soluble Vitamins A, D, E, K

### Vitamin A

Vitamin A is needed for protein assimilation, calcium assimilation, brain development, glandular function, sex hormone production, immune system function, growth of hair, skin, and eyes, and fetal development (vitamin A helps prevent birth defects).

#### Sources:

Fat from fish, as well as their eggs, skin, and liver (think cod liver oil)

Fat from sea mammals

Fat and organ meats (liver, kidneys, heart) from grass-fed/pastured poultry and livestock

Milk and other dairy products from grass-fed/pastured livestock

Egg yolks from pastured poultry

Note: Whenever possible, choose animal products and by-products from animals that were raised without hormones and antibiotics.

Animal products are the only sources of pure vitamin A, but plants contain **carotenoids**, which can act as vitamin A precursors. If necessary, the liver can convert carotenoids into vitamin A. Carotenoids also act as antioxidants in the system.

#### Plant sources of carotenoids:

Seaweeds

Green and yellow vegetables and fruits, such as sweet potato, kale, mustard greens, carrots, apricots, peaches, pumpkin, squash, chickweed, nettle, violet, red raspberry, red clover, and purslane

Vitamin A is depleted by stress, exposure to toxins, overexertion, cold weather, and fever.

### Vitamin D

Vitamin D helps the body make neurochemicals that help prevent depression. It is important for calcium and phosphorus absorption and utilization. Vitamin D improves immunity and is necessary for thyroid function.

Vitamin D precursors found in food require conversion by the liver and kidneys. The skin can create vitamin D through exposure to the sun's rays.

#### Sources:

Egg yolks from pastured poultry

Fish liver oil (again, think cod liver oil)

Shellfish

Small fish from northern (cold!) waters (such as sardines)

Butterfat from grass-fed/pastured livestock

Fat and organ meats from grass-fed/pastured poultry and livestock

Dandelion greens  
Alfalfa  
Nettle  
Parsley  
Oatmeal  
Sweet potato

Note: Some sources say that vitamin D can only be obtained from animal products, but other sources say that it can also be obtained from plants.

### **Vitamin K**

Vitamin K is especially important for good bone development during gestation and childhood. It is also important for tooth growth and repair and bone repair during any stage of life. In regard to bone and teeth development, growth, and repair, vitamin K is necessary for the synthesis of osteocalcin, a protein in bone tissue on which calcium crystallizes. It plays an important role in blood clotting and aids in converting glucose to glycogen in the liver.

#### **Sources:**

Egg yolks from pastured poultry  
Fat and organ meats from grass-fed/pastured poultry and livestock  
Fat and organ meats from wild-caught seafood  
Fermented foods, including fermented vegetables (think miso, kimchi, sauerkraut, lacto-fermented pickles, raw apple cider vinegar, kombucha, yogurt, kefir, buttermilk, and sour cream)  
Molasses  
Brassica family vegetables  
Oatmeal  
Oatstraw and oat tops  
Alfalfa  
Green tea  
Kelp and other seaweeds  
Nettle

### **Vitamin E**

Vitamin E is a powerful antioxidant—it protects against the oxidation of lipids inside the body (cell membranes are composed of lipids). Vitamin E also helps improve oxygen utilization in the body, increases the immune response, helps prevent cancer and cardiovascular diseases, and helps repair body tissues.

Technically, vitamin E is a family of eight different but related molecules.

**Sources:**

Flaxseed

Dulse, kelp, and other seaweeds

Egg yolks from pastured poultry

Fat and organ meats from grass-fed/pastured poultry and livestock

Fat and organ meats from wild-caught seafood

Sweet potato

Olive oil

Dark green leafy vegetables (such as kale, collards, Swiss chard, and spinach)

Legumes

Nuts

Seeds

Oatmeal

Oatstraw and oat tops

Dandelion leaf

Nettle

Red raspberry

Rose hips

Note: If you choose to supplement with any of these fat-soluble vitamins, never take more than the recommended dose. The body stores excess fat-soluble vitamins in fat tissue and too much can be dangerous. Always consult your doctor or other health-care provider before supplementing with fat-soluble vitamins. Consuming fat-soluble vitamins through the diet is considered safe.