

Therapy with vitamin E

- 100-1,600 IU/day is usual therapeutic range; up to 3,200 IU/day used in menopause;
- Corrects the foregoing deficiency conditions if degeneration of the tissue has not progressed to irreparable damage;
- Reverses nutritional muscular dystrophy;
- Protects brain & nerves, muscles, heart & arteries, glands & reproductive organs from oxidative damage throughout life;
- Russian athletes use up to 150 IU/2-hour training to spare oxygen & promote endurance;
- Improves varicose veins, inflamed veins with blood clots (thrombophlebitis) & intermittent claudication; soothes dry itchy skin; regulates menstrual flow; prevents & alleviates some migraine headaches; prevents miscarriages;
- Protects lungs from damage due to smog; retards aging; preventive against cancer & heart disease, as well as general degeneration;
- Up to 100 IU/day used in premature infants, to protect cell membranes in brain, nerves, heart & muscles from oxidative destruction; to prevent blindness & brain damage;
- Cystic fibrosis requires 400 IU/day or more because of poor absorption;
- Topical use as anti-inflammatory agent, in cosmetics, to heal wounds & to protect skin against UV & other damage; retards skin ageing;
- Gamma tocopherol may inhibit prostate cancer & lung cancer.

VITAMIN K (Methyl Napthoquinone)

General. oil-soluble; anti-haemorrhagic factor;

- **Vitamin K** - from the Danish word “koagulation”; its discovery was made by virtue of its role in blood coagulation; several natural forms;
- Synthetic, water-soluble forms used in conditions of impaired fat absorption;
- Yellow, oily pigment abundant in green leafy vegetables, soya beans, peas & tomatoes;
- Normally manufactured by intestinal bacteria; depends on good intestinal health & flora;
- **History:** discovered 1934; isolated from alfalfa in 1939;

Nutrition

- **Sources:** widely available; best: alfalfa; dark leafy vegetables, associated with chlorophyll (chloroplasts); 50% of vitamin K produced by bacteria in lower intestine;
- **Supplements:** alfalfa; medical injections;
- **Absorption** into lymphatics; requires fats & oils; 40 - 70% absorbed; requires bile & pancreatic secretions;
- **Improved by:** edible fats & oils; vitamins A, C & E;
- **Antagonized by:** administration of antibiotics; mineral oil laxatives; bile obstruction;
- **Stability:** heat & oxygen-stable; destroyed by light, acid, alkali, oxidizing agents, alcohol;
- **Storage:** exclusively in the liver;
- **Excretion:** in bile;
- **Metabolism:** rapidly used up;
- **Interactions:** anti-coagulants interfere with activity by oxidizing vitamin K; intestinal synthesis is reduced by aspirin, some antibiotics & sulphonamides;

Functions of Vitamin K

- Co-enzyme in liver's synthesis of protein clotting factors in the blood (prothrombin & factors VII, IX & X);
- Converts precursor of prothrombin (glutamic acid) to gamma-carboxy-glutamic acid;
- prothrombin catalyzes conversion of fibrinogen to fibrin & therefore determines rate that blood clots;
- Required for function of proteins in bone & kidney; vitamin K appears to have function in calcium metabolism, transport & deposition;
- Co-enzyme involved in activation of glucose in liver (phosphorylation); conversion of glycogen to glucose in energy metabolism & respiration;

Quantities

- **Measurement:** µg or mcg.
- **Optimum: (SONA)** average 90 to 120 µg/day;
- **Minimum: (DRI)** Female 90 µg/day; male 120 µg/day
- **Deficiency** of vitamin K can result from administration of antibiotics & anti-coagulants, including aspirin; poor absorption; liver disease; may affect up to 50% of elderly;
- Can result in haemorrhaging (hypothrombinemia), prolonged clotting time, bruising;
- **Toxicity:** large doses may produce haemolytic anaemia; bile pigment accumulation in grey matter of nervous system (kernicterus), resulting in mental retardation, jaundice, haemorrhaging & neurological symptoms;

Medical therapy with vitamin K

- 30 - 100 µg/day used in hospital setting; 600 µg/day may be toxic dose;
- Prevent obstructive jaundice;
- Administered to counteract anti-coagulants during labour;
- Given during surgery to speed clotting & to prevent excessive bleeding;
- Administered to new-born infants to prevent deaths from excessive bleeding;

VITAMIN B-1 (Thiamine)

General - water-soluble; anti-beriberi factor; anti-neuritic factor;

- First member of the B-complex to be isolated & structurally identified;
- Imparts characteristic smell to the B-complex; contains sulphur & nitrogen;
- Adult body contains about 30 to 70 mg of thiamine;
- **History:** beriberi described in 7th century in China; rice bran found to prevent beriberi produced by eating polished rice in 1897; isolated in 1912, called "vitamin", identified in 1936; widespread B-1 deficiency in U.S. documented in 1943;

Nutrition

- **Sources:** all whole foods contain B-1; best: brewer's yeast; pork, lamb, beef, poultry; sea foods, whole grains, brown rice; fair: walnuts, pecans, lentils, beans; worst: processed & refined foods;
- **Supplements:** B-1, B-complex, multi-vitamin, multi-mineral-vitamin formulations;