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***Vitamin E.***

Vitamin E is the most effective, fat-soluble antioxidant known.

**Sources of vitamin E (tocopherol).**

Vitamin E is easily found in many common foods.

Vitamin E is found in the germ of a seeds or grains because most of the nutrients are concentrated there.

The best sources of vitamin E are found in unrefined edible vegetable oils flax, wheat germ, sunflower, canola, corn, soybean, olive oil, cottonseed, safflower and nuts ... and related products ...

Other sources of vitamin E are, fish, nuts, peanut butter, fruits, herbs, berries and green leafy vegetables.

### **Vitamin E is popular and easy to offer your dog as commercial supplements.**

The most potent and useful form of vitamin E is called alpha-tocopherol.

In Vitamin E oil supplements approximately 50% of the "tocopherol" content is in the form of alpha-tocopherol.

Vitamin E is available in various forms – "soft gel capsules" - contain d- or dl-alpha tocopheryl acetate, d- or dl-alpha tocopherol, and d- or dl-alpha tocopheryl acid succinate.

### **Purposes of Vitamin E.**

Vitamin E works to prevent oxidation of lipids that compose cell membranes, and "selenium" acts and works synergistically as oxidants.

In addition to helping vitamin E, selenium is important in the production of the key antioxidant enzyme "glutathione peroxidase", which targets harmful hydrogen peroxide and converts it to water.

Vitamin E suppresses platelet stickiness, acting as an anticoagulant to discourage the formation of clots that lead to heart problems.

Vitamin E (tocopherol).

Vitamin E is actually an umbrella term for a group of compounds called tocopherols and tocotrienols.

Each form has its own biological activity, the measure of potency or functional use in the body. Alpha-tocopherol ( $\alpha$ -tocopherol) is the name of the most active form of vitamin E.

Of the eight naturally occurring forms of vitamin E, it appears that only "naturally occurring alpha-tocopherol (commonly known as d-alpha-tocopherol)" is maintained in the blood circulation.

Synthetic alpha-tocopherol is commonly known as d1-alpha-tocopherol.

Natural vitamin E d-a-tocopherol is extracted from deodorised distilled oil [d.d.o] which is separated from some vegetable oil after crushing.

The natural form of vitamin E is clearly superior in terms of absorption and retention in the body.

The name "tocopherol" was derived from the Greek words for childbirth (tos), to bring forth (phero), and the chemical designation for an alcohol (ol).

### **Vitamin E benefit skin health.**

When applied to the skin in vitamin E-containing lotions, creams or oils it

encourage and promote healing, reducing scarring after injuries and burns, protecting cells from free-radical damage and reducing itchiness and aid in treating skin problems.

### **Vitamin E is a powerful antioxidant.**

Vitamin E as an antioxidant helps to stabilize cell membranes and protect the tissues of the skin, eyes, liver, breast, and testes, which are more sensitive to oxidation.

As acts as typical co-enzyme antioxidant ... the main function of vitamin E is to maintain the integrity of the body's intracellular membrane by protecting its physical stability and providing a defense line against first line tissue damage caused by oxidation.

The nutritional and protective antioxidant function and effects of vitamin E is also performed and enhanced by other enzymes and antioxidants, such as vitamin C, beta-carotene, glutathione (L-cysteine), and the mineral selenium.

It is involved in the regulation of vascular smooth muscle cell proliferation and protein kinase C activity

Vitamin E is directly absorbed from the intestines (ingested food), along with fat and bile salts and first find a path into the lymph and then into the blood, which carries it to the liver to be used or stored.

Vitamin E in commercial supplements is usually sold as alpha-tocopheryl acetate, a form that protects its ability to function as an antioxidant.

### **Vitamin E and heart disease.**

Vitamin E helps protect against heart disease by limiting the oxidation of LDL-cholesterol (more so in humans).

Vitamin E helps prevent oxidation of lipoproteins and reduces the stickiness of platelets in the bloodstream.

Vitamin E also keeps arteries flexible and elastic, allowing blood to flow freely.

Vitamin E helps prevent arteries from clogging "called plaque" that stick to blood vessel walls.

Vitamin E therefore acts as a blood thinner, allowing for blood to flow more easily through arteries even when plaque is present.

E Vitamin in combination with vitamin C help to stabilize LDL cholesterol in the

body.

This may help to reduce the risk of atherosclerosis.

### **Vitamin E and cancer.**

Some cancers are believed to result from internal cellular oxidative damage to DNA caused by free radicals.

Free radicals can damage DNA, leading to mutations in cells a cause of cancer. Vitamin E as antioxidant help protect against the damaging effects of free radicals.

The vitamin may also help fight cancer by boosting and enhancing the immune system. Some evidence associates higher intake of vitamin E with a decreased incidence of prostate cancer and breast cancer.

### **Vitamin E and cataracts.**

Because of vitamin E antioxidant action - may help to protect against cataracts and age related macular degeneration.

Cataracts are growths on the lens of the eye that cloud vision.

They increase the risk of disability and blindness in aging adults.

Lens clarity, which is used to diagnose cataracts, is better in dogs regular offered Vitamin E in daily diets

"Uveitis" is another eye disorder for which the antioxidant vitamins E and C may be helpful.

Uveitis is inflammation of the uvea, the middle layer of the eye between the sclera and the retina.

### **Vitamin E and cognitive performance.**

Vitamin E supplementation improves cognitive performance in individual healthy dogs and in those with dementia. In addition, vitamin E, together with vitamin C may in treating and prevent the development of cognitive performance.

### **Vitamin E (tocopherol) deficiency.**

Vitamin E deficiency is a very rare and often results in damage to nerves.

Vitamin E deficiency affects the central nervous system and may result in progressive neuromuscular disease characterized by loss of reflexes, muscle weakness, loss of balance and impaired ability to coordinate voluntary movements (ataxia).

Vitamin E deficiency may also contribute to cardiovascular diseases, including

atherosclerosis, as well as an increased risk of certain cancers.

here are three specific situations when a vitamin E deficiency is likely to occur.

It is seen in patients that cannot absorb dietary fat, has been found in premature, very low birth weight puppies and is seen in individuals with rare disorders of fat metabolism.

Such pups are born in a state of relative vitamin E deficiency.

Vitamin E deficiency in premature pups persists during the first few weeks of life and can be attributed to limited placental transfer of vitamin E, low tissue levels at birth, relative dietary deficiency, intestinal malabsorption, and rapid growth.

Premature puppies may be at risk for vitamin E deficiency because they may be born with low tissue levels of the vitamin, and because they have a poorly developed capacity for absorbing dietary fats.

### **Vitamin E (tocopherol) overdose, toxicity, side effects.**

The health risk of too much vitamin E is low.

Vitamin E appears to be safe when consumed as supplementary as directed.

Large doses of vitamin E may interfere with the body's ability to clot blood.