

FAT SOLUBLE VITAMIN MATCH CUT OUT MIX & MATCH

VITAMIN A	VITAMIN D	VITAMIN E	VITAMIN K
1st fat soluble vitamin to be discovered	Ergosterol in plants	Precursor is Alpha-tocopherol	Derived from phyloquinone-plants, and Menaquinone-microbial
Required by all animals	7 dehydrocholesterol in animals	First recognized vitamin as a fat soluble factor required for normal reproduction in rats	Synthetic Menadione used widely
Functions in the animal as an alcohol, aldehyde, acid, or esterified with a fatty acid	Elevate Ca and P levels in blood	Antioxidant by preventing peroxidative degradation of lipids in animal cells	Bacterial synthesis in rumen and some in large intestine
All trans molecules show greatest biological activity in this vitamin	Increase Ca and P absorption from gut	Formation of free radicals inhibit enzyme activity and damage cell membranes	Functions in blood clotting time
Main precursor is found in plants and consumed by animals as beta-carotene	Increase Ca and P release from bone	Important in immune response-increases antibody production	Cofactors of enzymes involved with prothrombin production
Stored in Kupffer cells in the liver,	Aids in P absorption in small intestine	Similar function to trace mineral selenium	Deficiency = increased clotting time
One IU provides the vitamin activity of 0.3 ug of all trans retinol	Uptake is rapid in the duodenum but most is absorbed in the jejunum and ileum	Se prevents lipid peroxidation in animals deficient in this vitamin	Feed additives can inhibit growth of Vitamin ?-producing gut bacteria
Dietary requirements for most species are between 1500-4000 IU/kg of diet	Deficiency sign: Abnormal skeletal growth and development	Most expensive vitamin and quite unstable	Clean/slotted floors reduce Vitamin exposure from feces

Rhodopsin synthesis in the retina of the eye	Deficiency causes Rickets in Young	Tocopherols absorbed in jejunum	
Important for normal night vision	Deficiency causes Osteomalacia in old	Requirement for this vitamin increases with increasing FUPA level in the diet	Dicoumarol and warfarin (another Vitamin antagonist) are common rat poison ingredients
Functions include: bone growth; antioxidant, and maintenance of squamous epithelial cells	Inexpensive vitamin	Placental transfer is very ineffective	
Deficiencies include: Night blindness; Keratinization of epithelial cells; Respiratory infections; reproductive disorders	High-dose of this vitamin before calving once used to prevent milk fever	Absorbed by passive diffusion in the jejunum	
Excess of this vitamin is toxic and lethal	Toxicity causes calcification of bone and other soft tissues like liver, kidney and muscles	Unesterified version of this vitamin found in adipose tissue	
Legumes are a source	Feeding very high levels has been used to try to improve beef tenderness. This practice can cause significant decreases in dry matter intake.	Deficiency signs include: Reproductive failure, derangement of cell permeability, white muscle disease, liver necrosis, Mulberry heart, Muscular lesions	Sweet clover disease- Dicoumarol blocks the Vitamin K-dependent enzyme, but cannot catalyze the reaction, leading to internal bleeding in cattle
Supranutritional use is intramuscular fat	Supranutritional use is tenderness of meat	Supranutritional use is color stability of red meat	
Retinol, Retinal, Retinoic acid			