

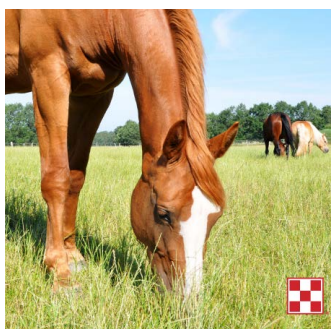
Ask the Nutritionist

KAREN DAVISON, PH.D., EQUINE TECHNICAL SOLUTIONS, PURINA ANIMAL NUTRITION

Ask the Nutritionist is a monthly column featuring questions answered by PhD equine nutritionists and sponsored by Purina Animal Nutrition. Have a nutrition question you want to see featured? Email Marie Rosenthal. For clinics looking for specific nutritional advice, visit purinamills.com/ask-an-expert.

What do you recommend feeding a horse with low blood levels of vitamin E?

Vitamin E is one of the body's most potent antioxidants affecting immune function, the neuromuscular system and reproduction. The best dietary source of vitamin E is growing green grass, but since many horses do not have consistent pasture access, vitamin E supplementation is needed. Being fat-soluble, vitamin E will be stored for utilization during periods of low intake. A normal adult horse previously consuming adequate vitamin E can reportedly go up to 18 months without presenting noticeable signs of deficiency. This was good for horses in the wild as they went from grazing green forages in the spring and summer to grazing dead, standing dry matter in the fall and winter. With 90% vitamin E storage being in adipose tissue, body condition will affect vitamin E body stores.



Serum α -tocopherol level ≥ 2 ug/mL is considered normal¹; however, there is wide variation in single-sample results, and some horses with low vitamin E levels show no apparent clinical effects. Factors affecting serum α -tocopherol concentrations include breed, age, number of samples, diet, sampling time in relation to feeding, physical conditioning, collection method and sample storage before analysis. Due to individual variability reported over a 72-hr period, and deficient horses fluctuating between deficient and normal concentrations within a 24-hr period², multiple samplings (i.e., three per horse) would be ideal. More practical recommendations are to repeat a single sample and average the values if the first sample is marginal (α -tocopherol between 1.5 and 2 ug/mL). Horses with a high suspicion of α -tocopherol deficiency based on clinical signs, but with marginal or normal serum α -tocopherol concentrations, should have at least two samples evaluated at different time points.³

SOURCES OF VITAMIN E

There are multiple sources of vitamin E, and not all are equally utilized by the horse nor equally stable in manufactured feed formulations. Both factors should be considered when determining whether to supplement with vitamin E and what supplements to choose.

There are multiple reports of natural-sourced vitamin E being more effective in

elevating serum α -tocopherol than synthetic-sourced vitamin E. However, synthetic vitamin E supplementation has consistently maintained serum levels ≥ 2 ug/mL in healthy horses. Due to the stability, cost-effectiveness and long history of being an effective vitamin E source for normal horses, synthetic vitamin E is a reliable source for feed formulations.

Natural-source, more specifically aqueous RRR- α -tocopherol, supplementation may be warranted for horses with low serum vitamin E levels despite adequate dietary intake from forage and supplemented feed. This water-soluble α -tocopherol is currently recommended for horses with Equine Motor Neuron Disease (EMND), Neuroaxonal

Dystrophy/Equine Degenerative Myeloencephalopathy (NAD/EDM) or vitamin E deficient myopathy.¹ This form is not stable in feed formulations and must be provided through a supplement.

Current 2007 NRC recommendations of 1 IU/kg BW for maintenance and gestation, 1.6 – 2 IU/kg BW for increasing work levels and 2 IU/kg BW for growth and lactation are adequate in normal, healthy horses. Additional supplementation with water-soluble α -tocopherol at 2 – 5 times NRC recommendations may be warranted in horses with low serum vitamin E levels. Retest horses after three weeks of supplementation. In healthy exercising horses, a high dosage of vitamin E supplementation (10x NRC requirements) was shown to be potentially detrimental to beta-carotene absorption and thus not recommended.

Contact a Purina PhD nutritionist for a complimentary consultation through Purina Customer Service, 800-227-8941 or send us a message at www.purinamills.com/ask-an-expert.

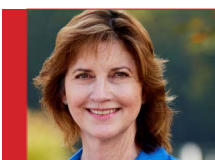
NEW RESOURCE CENTER

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¹Finno, C.J. and S.J. Valberg. A Comparative Review of Vitamin E and Associated Equine Disorders. *JVIM*. 2012; 26: 1251 – 1266.

²Craig AM, et al. Variations of serum vitamin E, cholesterol, and total serum lipid concentrations in horses during a 72-hour period. *Am J Vet Res* 1989; 50: 1527 – 1531.

³Vanschandevijl K, et al. Variation in deficient serum vitamin E levels and impact on assessment of the vitamin E status in horses. *Vlaams Diergeneeskundig Tijdschrift* 2008; 78: 28 – 33.



ABOUT THE AUTHOR

Dr. Karen Davison, Ph.D., is a director and nutritionist on the Equine Technical Solutions Team at Purina Animal Nutrition. She enjoys working directly with horses and horse owners to tweak individual feeding programs to help each horse reach its true potential.