

Natural Vitamin E and the Performance Horse: A Winning Combination!

Vitamin E is essential for the performance horse

Vitamin E, the major lipid-soluble antioxidant defense in cells, plays an important role in preserving cell membrane integrity. It helps maintain normal muscle and nerve functions, prevent muscular disease, and protect enzymes and other intracellular components from oxidation-induced damage.

Vitamin E interrupts the production of harmful free radicals at the initial stage of peroxidative damage. The more active the cell (skeletal and involuntary muscle cells), the greater the risk of tissue damage if vitamin E stores are insufficient. Exercise-induced muscle damage is a common problem in performance horses. If vitamin E levels in muscle tissue are inadequate, the risk of exercise-induced muscle damage is increased.

Evaluation of exercise-induced muscle damage in the horse

Plasma enzyme activity, specifically that of creatine kinase (CK) and aspartate aminotransferase (AST), is used as an indicator of muscle damage during exercise. In addition to enzyme activity, various assays are employed to assess oxidative stress by measuring free radical markers. When a fatty acid is peroxidized, it is broken down into aldehydes, which are eventually excreted. Aldehydes such as thiobarbituric acid reactive substances (TBARS) are widely accepted as general markers of free radical production.

A case for vitamin E supplementation in the performance horse

A study by McMeniman and Hintz (1992) reported TBARS increased with exercise in all horses, but even more so in horses with low plasma vitamin E. This suggests that horses with inadequate access to vitamin E will have lower tolerance to exercise.

More recent work conducted at Virginia Polytechnic Institute and State University showed that a higher vitamin E intake is associated with less oxidative stress and enhanced antioxidant status in horses throughout an endurance ride (Williams, 2003). The research team found that horses undergoing heavy exercise would have improved welfare and possibly performance if they were supplemented with vitamin E.

Hoffman and coworkers (2001) researched the effects of supplemental vitamin E on nutritional and oxidative status of polo ponies, equine athletes subjected to short bursts of intense work. Based on blood values



taken throughout exercise tests that simulated polo play, the horses benefited from consumption of supplemental vitamin E, especially late in the competitive season when overtraining may have been an issue.

Natural vs. synthetic vitamin E

The most common source of vitamin E used in animal feeds is synthetic dl-alpha-tocopheryl acetate. Made from petrochemicals, synthetic vitamin E (dl-alpha-tocopherol) is not as biologically potent as natural vitamin E. The plant-based natural form of stable vitamin E is d-alpha-tocopherol (liquid) and d-alpha-tocopheryl acetate (powder). There are physiological differences in the absorption, utilization, and tissue retention of synthetic and natural vitamin E. In fact, the body preferentially transports and incorporates natural vitamin E. Current research in several species, including horses, shows that natural vitamin E is two to three times more potent than synthetic.

The bottom line

Performance horses are susceptible to exercise-induced muscle damage. Research has shown decreased muscle enzyme activity and oxidative stress in performance horses supplemented with vitamin E. Choose the Elevate® family of products to provide the most bioavailable option for your patients.



P.O. Box 1013
Versailles, KY 40383
800-772-1988
KPPusa.com

22-168

You can count on the Elevate® family of natural vitamin E products to provide the highest level of bioavailability

Prescribing the right form of natural vitamin E is critical

ELEVATE® W.S. LIQUID is the fastest acting form of natural vitamin E. It has the ability to raise tocopherol blood level within 72 hours. Studies at UC Davis revealed that Elevate W.S. will pass through the blood-brain barrier. Elevate W.S. is recommended anytime there is a need to increase vitamin E blood levels quickly. It is the product of choice for supporting horses and foals with acute muscle dysfunction, neurological diseases, and immune challenges. Once the required tocopherol blood levels are attained, follow-up supplementation is recommended with Elevate Concentrate.



ELEVATE® CONCENTRATE POWDER provides 5,000 IU of natural vitamin E per scoop, allowing you to easily support horses with high vitamin E requirements over long periods of time. Slower acting than its liquid counterpart, Elevate Concentrate takes up to 21 days to reach maximum levels. Elevate Concentrate is recommended for everyday, long-term, preventive support and as a follow-up to Elevate W.S. supplementation.



Elevate W.S. and Elevate Concentrate are sold only through veterinarians.



ELEVATE® SE is the product of choice to supply a combination of natural vitamin E and organic selenium yeast. One scoop (7 grams) of Elevate Se contains 1,500 IU of natural vitamin E and 1 mg selenium (provided by highly bioavailable and safe organic selenium yeast).



ELEVATE® MAINTENANCE POWDER is appropriate to maintain required blood tocopherol levels and is economical for long-term use. One 7-gram scoop provides 1,000 IU of natural vitamin E. Elevate Maintenance Powder takes up to 21 days to reach maximum levels. When appropriate, Elevate Maintenance Powder can be used to support desired blood levels of vitamin E after a course of Elevate W.S. has been completed.



Elevate Se and Elevate Maintenance Powder are sold through retail stores and online.

REFERENCES

Hoffman, R. M., K. L. Morgan, A. Phillips, J. E. Dinger, S. A. Zinn, and C. Faustman. 2001. Dietary vitamin E and ascorbic acid influence nutritional status of exercising polo ponies. In: Proc. 17th Equine Nutrition and Physiology Society, Lexington, Kentucky. pp. 129-130.

McMeniman, N. P., and H. F. Hintz. 1992. Effect of vitamin E status on lipid peroxidation in exercised horses. *Equine Vet. J.* 24:482-484.

Williams, C. A., D. S. Kronfeld, T. M. Hess, J. E. Waldron, K. E. Saker, R. M. Hoffman, and P. A. Harris. 2003. Vitamin E intake and oxidative stress in endurance horses. In: Proc. 18th Equine Nutrition and Physiology Society, East Lansing, Michigan. pp. 134-135.



For more information, please email
WiserConcepts@KPPusa.com
or call **800-772-1988**.

