

Q Can supplementing with Vitamin E and /or organic selenium be helpful to horses with muscle soreness or stiffness after exercise, including horses who suffer from Tying Up and EPSM?

A Yes. Vitamin E and selenium are muscle antioxidants which act to minimise the uncontrolled oxidation of polyunsaturated fats or lipids within the structure of muscle cell walls and other tissues. High amounts of oxygen perfuse through the muscle cell membranes, up to 70 litres per minute in a galloping horse. These oxidation reactions can produce harmful 'Oxygen Reactive Species' or "free radicals", which can damage the cell membranes to reduce muscle power, increase muscle fatigue and delay recovery. Vitamin E and selenium work together to prevent muscle cell damage in the following way: During exercise, Vitamin E acts by providing the **first line of defence** to help in the reduction of harmful oxidation of polyunsaturated fatty acids or lipids in the muscle cell walls to minimise damaging peroxide formation within muscle cell membranes. Selenium then contributes as the **second line of defence** as it is incorporated into the essential muscle cell antioxidant enzyme, glutathione peroxidase, by breaking down peroxides to prevent them oxidising into even more detrimental superoxide inflammatory compounds. Superoxides damage and weaken muscle cell membranes which can cause tight and/or sore muscles. Therefore, if Vitamin E and selenium levels in muscle tissues are inadequate, the risk of exercise - induced muscle damage is increased and may result in episodes of 'tying up' or EPSM in susceptible horses.

Q E-Se Supplets® also contain magnesium and Vitamin B1. Why?

A Many feeds are low in magnesium and Vitamin B1 and both of these nutrients have essential roles in muscle function. Horses on highly concentrated diets may be unable to synthesize sufficient B1 during microbial fermentation of fibre in the hindgut to meet their daily needs.

Vitamin B1 is included to help correct inadequate dietary levels as deficiencies of Vitamin B1 have been associated with muscle weakness in horses. Poor uptake of magnesium from feed can result in a relative magnesium deficiency. Magnesium has been included as it has roles in muscle contraction and it also helps with the stability of muscle cell membranes.

Q What pack sizes are E-Se Supplets® available in?

A E-Se Supplets® are available in 1.4 kg (93 x 15g doses), 4kg (266 x 15g doses) and 10kg (666 x 15g doses) packs.

All of our products are manufactured in Australia in a modern accredited facility under a strict Code of Good Manufacturing Practice (cGMP) maintained by annual independently audited FeedSafe® GMP Certification to Australian GMP code standards.



Kohnke's Own®

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Kohnke's Own®

E-Se Supplets™



***Questions
and
Answers***

E-Se Supplets™

E-Se Supplets™ are an innovative way of correcting low or inadequate levels of Vitamin E and organic selenium in the diets of working, breeding and growing horses.

The Supplet® pellet form eliminates waste from dust, sift-out and nutrient interaction which is common with powdered supplements of these important antioxidant nutrients.

Q. E-Se Supplets® contain organic selenium. Why is this beneficial?

A The source of selenium in **E-Se Supplets®** is included as organic selenomethionine chelate as it is recognised as a highly stable, bio-available form of selenium. Research has shown that inorganic selenite and selenate forms can act as pro-oxidants in the feed and may actually provide no active antioxidant protection in the muscles and tissues.

The organic form helps ensure optimum uptake from the small bowel to correct low dietary levels. Organic selenium is considered more bioactive and less toxic to the environment compared to inorganic forms of selenium, such as selenites and selenates.

Q. E-Se Supplets® are provided in a Supplet®, pelleted form. What are the benefits of this?

A **E-Se Supplets®** are a highly distinctive, bright pink coloured pellets to identify them apart from ordinary feed pellets. They are convenient to use and minimise wastage from **sift-out, separation and sludging** and blow away from outdoor and paddock feeders, which is common with powdered supplements and they mix in well with grains and chaff. **E-Se Supplets®** are the only pelleted Vitamin E and selenium supplement available and they are cold-pressed to avoid nutrient damage during the pelleting process which is a problem with steam-pressed pellets. **E-Se Supplets®** have been formulated specifically to only include highly compatible nutrients to reduce nutrient interactions and thus ensure that optimum stability and potency is maintained.

Q. What are the roles of selenium and Vitamin E in a horse's diet?

A Both Vitamin E and selenium have important roles as muscle and fat antioxidants in the body. These nutrients also support muscle development, help maintain optimum immune function and reproductive health in broodmares. Research has found that supplementing with additional Vitamin E in the 4 weeks prior to foaling helps to increase the concentration of immunoglobulins in mare colostrum, leading to optimum immunity being passed to the nursing foal.

Organic selenium, only in the form of selenomethionine chelate as in E-Se Supplets, has been proven to be beneficial to the activity of the immune system of horses.
Reference: Montgomery et al (2012) CJVR 76: 281-291

Q. What are the signs of a low or inadequate intake of selenium and Vitamin E in horses?

A Selenium and Vitamin E are often low or inadequate in grain and hay based diets in all classes of horses. Selenium deficiency is particularly common in the grain, hay and pastures of horses grazing selenium deficient soils in many parts of New Zealand. Low selenium blood levels are common in breeding horses and those in heavy training due to their increased requirements for these nutrients. Both Selenium and Vitamin E are highly inter-related as antioxidants and therefore signs of deficiency of one or the other may be manifested. Selenium deficiency can cause reduced fertility in mares, poor muscle development in foals and growing horses and reduced performance in working horses. Selenium deficient foals may also have difficulty suckling and swallowing, suffer respiratory distress and have impaired cardiac function. Deficiencies in selenium, or the combination of inadequate selenium and Vitamin E in the diets of foals and growing horses, can also lead to a nutritional muscle disease or myopathy, commonly referred to as 'white muscle disease'. This occurs as an inflammatory degenerative disease which affects the heart muscle of foals up to 11 months of age. Both Selenium and Vitamin E act as muscle antioxidants to help protect muscle cell membranes cells against oxidative damage during exercise. An inadequate dietary intake can cause sore and tight muscles following exercise, as well as predispose an exercising horse to conditions such as 'Tying Up' and Equine Polysaccharide Storage Myopathy (EPSM). A low or inadequate intake of Vitamin E can also result in a compromised immune system, increasing susceptibility to viral respiratory diseases. Vitamin E deficiency can also cause weight loss, subcutaneous swellings, muscle weakness, a stiff gait and a rough coat. It is also associated with Equine Degenerative Myeloencephalopathy (EDM), due to brain and nerve damage.