

HAS YOUR HORSE HAD HIS ONE A DAY?



THE EXPERT
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Could your horse's diet be lacking in important nutrients and is he in need of a supplement? Independent equine nutritionist Fiona Watkins helps you decide

Vitamins and minerals are vital to a horse's physical wellbeing. If they don't receive the right amount, it's impossible for them to remain healthy.

Even horses that are not being exercised – such as retired veterans or injured horses on box rest – still require proper vitamin and mineral fortification if they are not being fed concentrates (hard feed) or forage at optimum levels.

Good doers, senior horses and those on a restricted feeding ration are most at risk of deficiencies and it is up to the owner to fill these nutritional gaps.

But how do you know if your horse is deficient, and which are the right products to give him?

Does your horse need a supplement?

The best way to determine if your horse's current feeding programme requires supplementation is to have your forage and feed analysed.

This allows you to determine the quantity of vitamins and minerals consumed each day, versus your horse's recommended daily intake (RDI). An equine nutritionist can help you do this.

Many owners choose to add certain supplements to their horse's daily feed "just in case", believing this will ensure the right vitamin and mineral needs are being met.

However, this kind of unnecessary supplementation can be expensive. In some cases it can also lead to toxicity, if your horse's diet was high in certain vitamins and minerals in the first place.

Feeding calcium and selenium at the incorrect levels, for example, can lead to health issues.

As a general rule, your horse is more likely to need a vitamin-mineral supplement if you feed one of the following diets:-

- A forage-only diet (he eats only grass or hay);
- Forage together with unfortified grains (oats, for example);
- Forage plus hard feed that is fed at a lower quantity than recommended by the manufacturer.



Facts of life

A horse's vitamin and mineral requirement will alter throughout his lifetime. Supplementation is therefore particularly beneficial for the following:

1 Breeding mares and youngstock: When in foal, a mare's nutritional needs become greater and more specific the closer she gets to the end of her pregnancy. There are certain vitamin and mineral supplements available which include the correct levels of targeted minerals, namely calcium and phosphorus, which are essential in pregnancy and lactation. These minerals are also vital for foals, which require higher intake levels for growth.

2 Veterans: Older horses often benefit from a vitamin-mineral supplement, even if they are eating the recommended levels, as their gastro-intestinal tracts are less effective at absorbing nutrients.

Phosphorus retention is particularly reduced in the elderly horse, mainly through a reduction in forage digestion. Reduced phosphorus retention is also a symptom of Cushing's disease.

3 Laminitis: Research has shown certain minerals may help to reduce the likelihood of laminitis occurring. Beneficial minerals include magnesium and chromium.

4 Competition horses: These horses require greater levels of minerals such as calcium, phosphorus and magnesium, which are needed for muscle contraction and nerve impulses. Competition animals should also receive extra sodium and chloride, to replace salt lost through sweating.



If your horse only eats grass or hay, he may be missing out on important nutrients



To determine whether your horse needs a supplement, have his diet analysed



A shiny coat is an indicator your horse has a healthy diet

The one-a-day approach

Once you have determined your horse needs a vitamin and mineral supplement, you have several choices in the type of product you provide.

It is better to select a 'complete' or multi vitamin and mineral supplement, rather than targeting a single nutrient (such as vitamin E) or mineral (copper, for example) that may be deficient.

Providing an excessive amount of one mineral or vitamin can interfere with the absorption of others.

In addition, many vitamins and minerals are not particularly palatable by themselves, and could cause your horse to reduce his feed intake and further contribute to any deficiencies.

The choice of supplements is vast, so there will be one that suits your horse

A complete supplement contains multiple vitamins and minerals mixed together. They are the equine equivalent of 'one-a-day' capsules humans take.

At a minimum you should choose a product that contains calcium, phosphorus, trace minerals (including copper, zinc and selenium) and vitamins A, D and E.

Although present in pasture, hay and unfortified grains, the concentration of these vitamins and minerals often fall below a horse's required levels.

Choosing the right supplement

Complete vitamin and mineral supplements are available in three primary forms:-

- Blocks or bricks – in the form of a lick;
- Granules or powder;
- Ration balancing pellets – more commonly known as 'balancers'

All of the above have their own advantages and disadvantages. Read on to find out the pros and cons of each one.

1 BLOCKS OR BRICKS

Most vitamin and mineral blocks provide mostly salt, with a very small amount of trace minerals.

There are some blocks available, however, that fit the definition of a true multi vitamin and mineral supplement.

While offering a relatively low-cost and easy option, you can never be certain how much of the block your horse has consumed each day.

Also, if the block is placed outside, daily exposure to the elements can render many of the vitamins inactive.

Salt blocks are an exception, as they provide an effective and convenient way of adding this mineral to the diet.

2 GRANULES OR POWDER

Loose vitamin and mineral supplements give you much more control over the level of intake.

Most high-quality supplements in loose form contain concentrated levels of vitamins and minerals.

For the average 500kg horse, typical feeding recommendations for granules are in the range of 30g to 60g per day.

To be effective, select a supplement containing at least 12 per cent calcium, 12 per cent phosphorus, 4,000ppm (parts per million) zinc and 750ppm copper.

If the supplement contains lower mineral concentrations, the feeding rate will need to be higher for an adult horse.

3 FEED BALANCERS

Although not as concentrated as a powdered supplement, balancing pellets are still more concentrated than a fortified hard feed.

Unlike the other supplements, balancers also contain an additional source of protein, which is beneficial for hard-working, performance horses.

The pellets are normally available in a high protein form (32-25 per cent crude protein) or a lower protein form (12-10 per cent protein).

In many cases, balancers are similar to nutrient-dense concentrated feeds. But as they do not contain grains, they can be used as a low-calorie alternative for supplying necessary, essential nutrients to over-weight equines.

Feeding rates for balancers are usually in the range of 450-900g per day.

To be effective at this rate, select a balancer that contains at least two per cent calcium, one to two per cent phosphorus, 400ppm zinc and 75ppm copper.

Hard feeds are fortified with vitamins and minerals



ESSENTIAL NUTRIENTS

The National Research Council has outlined the nutrients that should be included in a horse's daily diet. When choosing a vitamin and mineral supplement for your equine, look for everything outlined in the table below:

MAJOR MINERALS (required in larger quantities)	TRACE MINERALS (required in smaller quantities)	B-VITAMINS	VITAMINS
Calcium (Ca)	Cobalt (Co)	Biotin	Vitamin A
Chloride (Cl)	Copper (Cu)	B12	Vitamin C
Magnesium (Mg)	Iodine (I)	Folic acid	Vitamin D
Phosphorus (P)	Iron (Fe)	Pantothenic acid	Vitamin E
Potassium (K)	Manganese (Mn)	Niacin	Vitamin K
Sodium (Na)	Selenium (Se)	Pyridoxine B6	
Sulphur (S)	Zinc (Zn)	Riboflavin	
		Thiamine	

HORSE SENSE FEED AND SUPPLEMENTS

If the balancer has lower concentrations, the feeding rate will need to be higher.

Follow the guidelines

The choice of supplements is vast, so there will be one that suits the needs of your horse. But do your homework and choose your supplement carefully.

Speak to a qualified equine nutritionist, or give a product manufacturer a call and ask about the quality of ingredients.

Once you've purchased a product, follow the feeding recommendations printed on the label, in order to ensure you feed it at the correct levels for your own horse. **H**



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VITAMINS AND MINERALS AND WHAT THEY DO

MINERAL	ROLE AND IMPORTANCE
Calcium	Critical for bone growth, development and maintenance. Calcium deficiencies result in bone deformities/skeletal weakness, joint problems and may lead to muscle weakness and conditions such as tying up, and thumps in heavily sweating, exhausted horses. This mineral must be given in appropriate balance to phosphorus – at a ratio of two (calcium) to one (phosphorus).
Sodium	Essential for normal growth, it is a key electrolyte in performance animals. Sodium is vital for normal nerve and muscle function and carbohydrate digestion.
Magnesium	An important electrolyte in muscle contraction, body fluids and metabolic enzymes.
Phosphorus	Another major constituent for bone development and growth. A deficiency in phosphorus can result in retarded bone formation, retarded growth, poor appetite, infertility and poor conception, and lowered milk production.
Potassium	Involved in nerve and muscular function. Deficiency can result in a reduced appetite, retarded growth, weight loss, and also dehydration.
Chlorine	Needed for the same function as sodium (see above) and the same clinical signs will be displayed if the horse is deficient.
Sulphur	For healthy hair, skin and hooves.
Cobalt	Integral in the synthesis of vitamin B12 (which helps to keep the nervous system healthy) and involved in the formation of the oxygen-carrying component of red blood cells.
Copper	Major component of the oxygen-carrying part of blood cells. It helps protect cells from damage by certain chemicals in the body and keeps blood vessels and connective tissue elastic and flexible.
Iodine	Iodine is incorporated into the hormone thyroxin in the thyroid gland, which regulates the metabolic rate. Deficiency in this mineral can reduce metabolic rate and exercise tolerance. Iodine toxicity in horses has been more frequently reported than iodine deficiency, however. This may occur as a result of feeding seaweed (kelp). Seaweed may contain as much as 1,850mg/kg of iodine – at this level if more than 20g is fed to a horse per day, it would be harmful.
Iron	Needed in many enzyme systems and required for the transport of oxygen in red blood cells. Horses that are stabled or maintained on poor pasture have a higher chance of developing iron deficiencies. The first sign of this is anaemia.
Manganese	Contributes to carbohydrate and fat metabolism and the formation of chondroitin sulphate in joint cartilage.
Selenium	Deficiency can result in poor muscle development and pale, weak muscles (white muscle disease) in foals on bad diets. It can also result in poor performance in thyroid hormone metabolism.
Zinc	Essential for bone, cartilage and hoof formation.

VITAMIN	ROLE AND IMPORTANCE
Fat Soluble Vitamins	
Vitamin A	Important for vision, health of mucous membranes, growth, reproduction and resistance to disease.
Vitamin D	It's main purpose is the absorption, uptake and transport of calcium and phosphorus.
Vitamin E	An antioxidant which protects cells from damage. It also works with selenium as a body tissue stabiliser, keeping red blood cells stable and maintaining the vascular system.
Vitamin K	Required for effective blood clotting.
Water Soluble Vitamins	
Vitamin B-Group	The main B-vitamins are B1 (thiamine), B2 (riboflavin), B6 (pyridoxine), niacin, pantothenic acid, folic acid, biotin and vitamin B12. All are involved in energy transfer within the body.
Vitamin C	Important for normal collagen formation, maintenance and repair, vitamin C is found in the skin and connective tissue. It also acts as an antioxidant. A horse's requirement for this vitamin increases if he is exposed to stress.