

BALANCING A FORAGE-ONLY DIET



As equine enthusiasts, we know that providing plenty of good quality forage to your horse is essential for optimal health, both physiologically and psychologically. But if your horse is an easy-keeper, and does not require the addition of a feed to maintain weight, is he getting all the nutrition he needs from his hay or pasture alone? What if you provide a trace mineral block in his stall or pasture?

The answer to these questions is no. Unfortunately, no matter the quality of hay or pasture, there are still key nutrients that they cannot provide your horse, and failing to supplement them can lead to deficiencies over time. These include vitamins, minerals, and quality proteins (amino acids). Horses have a range of nutrient requirements to meet their daily needs, and if your horse is not provided these nutrients in sufficient quantities, they may experience deficiency symptoms. The severity of the deficiency symptoms depends on the degree of the deficiency and the time period over which the deficiency exists.

For an adult horse not in work, certain deficiencies can present as poor coat and hoof quality, or poor muscling. Others may have decreased appetite, poor immune system, poor performance or reproductive issues. For young, growing horses, or mares in foal or in lactation, these deficiencies can inhibit healthy growth and development of the foal, predispose the foal to certain diseases, or cause the mare to start depleting her own nutrient stores to meet the needs of her foal.

As a horse owner, you may realize that something is missing in the diet, but may not fully understand what is missing or how to feed it. There are many options when it comes to feeding your horse, and instructions are often misinterpreted, but we can help!

The most commonly neglected nutrients are vitamins and minerals.

Minerals can be subdivided into two groups: the macro-minerals, required in the diet in grams per day, and the micro-minerals (trace minerals), which are required in mg per day. Macro-minerals include calcium, phosphorus, sodium, potassium, magnesium, sulfur and chlorine. Trace minerals include iron, copper, zinc, manganese, selenium and cobalt. Defining the individual roles of each of these minerals is beyond the scope of this article, but the importance of each mineral in the right quantity and ratio to relating minerals is still highly significant. The importance of the calcium-phosphorus ratio is well known - that is, the amount of a mineral in the diet can influence the absorption of another, and this balance between the minerals must be taken into account if you want to ensure that your horse's diet is meeting its needs.

When discussing balancing minerals, we must also discuss hay analysis- how can you determine if your horse is getting everything he needs if you don't know what your hay is providing in terms of nutrients? The nutritional content of the minerals in hay varies from one hay to another, and the nutrient that varies most from one hay to the next is calcium. When feeding mares and foals, it is therefore particularly important to have their hay analyzed, whether it is only to know the percentage of calcium and phosphorus, which will make the adjustments necessary to optimize the ration and promote healthy bone development in the foal.

One important trace mineral to take into consideration is selenium. In Eastern Canada, our soils contain little to no selenium, and as a result our pastures, hays and grains do not provide our horses with enough, if any, dietary selenium. Why is this important? Selenium is a key trace mineral (required in very small amounts) that functions mainly as an anti-oxidant, working in conjunction with Vitamin E, to prevent cell membranes and enzymes from oxidation, and to reduce the risk of certain muscle problems such as white muscle disease and exertional rhabdomyolysis syndrome. This trace mineral got a lot of attention in recent years due to a number of horses that died because of selenium deficiencies. As serious as selenium deficiency is, so is selenium toxicity- more is not always better! Caution should be taken when supplementing additional selenium to your horse's diet; be sure to read all labels and follow all instructions carefully, especially if combining more than one product that contains added selenium. When in doubt, reach out to an equine nutrition consultant to ensure that the appropriate quantities are being fed.

Mineral imbalances can create deficiency symptoms as well. Too much phosphorus in a diet can create calcium deficiency, while an excess of zinc can present as copper deficiency. Therefore, it is important to understand that when balancing a diet, adding one mineral without understanding its interactions with other minerals is dangerous when trying to obtain optimal health.

Finally, with regard to vitamins, it should be remembered that, in theory, horses mainly require the fat-soluble vitamins A, D and E. Vitamin E functions within the immune system of the horse, and one result of this function may be increased resistance to disease or stress. Vitamin E levels are highest in fresh forages, so horses that have limited access to green pastures will deplete their vitamin E stored in adipose tissues, liver and skeletal muscles. In growing horses vitamin E plays a key role in nerve and muscle development and function. Mares also have an increased requirement for vitamin E due to rapid tissue synthesis by the foal in the last 2-3 months of gestation. Vitamin A is another fat-soluble vitamin that the horse is able to store in its body. Fresh, green forages will contain carotene, which can be converted into vitamin A by the horse, however, once grass is cut for hay, the levels start to deplete. Since we are required to feed hay for so many months of the year in Canada, supplemental vitamin A is important to prevent deficiency. It is also important to note that toxicity is possible with vitamin A, so be aware of what you are feeding if you are adding vitamin supplements to already fortified products. In theory, it is also said that good quality pasture can provide sufficient vitamin K and B complex, however in Canada our horses do not have access to quality pasture year round, and so supplementation could be beneficial to achieve optimal health.

Balancing the vitamins and minerals of the horse's food ration requires a deep technical knowledge of nutrition, careful calculations and a whole lot of time! A more realistic alternative for owners wishing to offer their horses a balanced ration is to choose a manufactured feed specifically formulated to meet the vitamin and mineral requirements of a horse on a forage-only diet.

What about that trace mineral block in the field? While they are very convenient, trace mineral blocks are mostly salt (sodium chloride), and the levels of trace minerals in them are very diluted, and will not be able to meet the nutrient needs of your horse. Additionally, salt blocks won't even be able to meet your horse's salt needs! Salt blocks are designed for cattle, who have much rougher tongues; horses' tongues are much softer and they cannot lick a salt enough to meet their daily requirements, so loose salt should be provided, either free choice, or added to a daily ration.

So what options do horse owners have to meet the vitamin and mineral requirements of the easy-keeping horse on a forage-only diet?

Ration balancers, such as Equilizer and Optimal offer a low-calorie, low-sugar and starch option, in a convenient, easy-to-measure pellet form, that will meet the vitamin and mineral needs of horses receiving only hay or pasture. Equilizer is formulated with the mature horse in mind, receiving sufficient protein from their hay or pasture, while Optimal is suited for broodmares and growing horses that require additional amino acid supplementation to meet their elevated requirements. Both contain organic copper, manganese and zinc, which increase the absorption of these key trace minerals, while both also contains organic selenium, which studies have demonstrated has increased absorption in broodmares and growing horses.

In summary, no matter the quality of the hay being provided, key nutrients are missing and must be supplemented to achieve optimal health and prevent deficiencies over time. It is important to choose a product formulated to meet the specific needs of your horse's life stage and activity level, and to follow all feeding directions in order to ensure that your horse is getting the nutrients he needs in sufficient quantities.