

EquiSUMMIT™

Equine Feed

Ingredients 101

What Is in Your Horse's Feed, and Why?

Maybe you've wondered, what is on my feed tag and what does it mean? Feed manufacturers are required to include information concerning the ingredients in their product and the guaranteed analysis levels for some nutrients. What the tag doesn't tell us is the purpose of each ingredient. This learning module will provide a brief overview of common ingredients found on the tag and why they are included in your horse's feed.

Carbohydrates

Carbohydrates are typically the largest portion of the horse's diet and are broken down into two distinct categories: complex or structural carbohydrates (fiber) and simple or non-structural carbohydrates (sugars and starches).

Complex carbohydrates are supplied by forages – such as hay or grass – and are digested by bacterial fermentation in the hindgut. Other highly fermentable complex carbohydrates like beet pulp or soybean hulls are often used to increase the energy content of the feed. The horse's gastrointestinal tract is uniquely designed to utilize fiber and structural carbohydrates, and these ingredients should be viewed as your horse's primary source of energy.

Simple carbohydrates consist of sugars and starches – typically supplied by grain such as corn, oats or barley. Sweet feeds often use molasses as a source of simple carbohydrates. These carbs provide a more concentrated source of energy than those found in forages and are used to provide additional energy when needed, based on age or activity level. Unlike complex carbohydrates, simple carbs are digested in the small intestine. While these nutrients can play a vital role in helping your horse to grow and perform, the horse's digestive system evolved to process a forage-based diet and feeding too much grain can lead to hindgut acidosis and other health issues.

Fats

Fats are a concentrated source of energy providing over two and a quarter times more energy than an equal weight of carbohydrates and can be supplied through the addition of corn, soybean, flax, vegetable oils or fish oils. Fats also play a role in the absorption of fat-soluble nutrients. Fat sources vary significantly in their nutritional value and their susceptibility to oxidation.

During oxidation fatty acids are destroyed, the energy value is decreases and toxic molecules included free radicals and oxides are produced. Once the oxidation process begins, it is irreversible making it crucial to monitor fat quality and using a proven antioxidant that can sustain fat quality for the shelf life of the product.

Higher fat feeds are more difficult to pellet. This either requires the fat to be added late in processing resulting in a "wet" looking feed or providing the feed in a textured form.

Proteins

Proteins are difficult for your horse to use as an energy source but are vital for growth and maintenance. Protein requirements vary based on the age and activity level of the horse. On feed tags, protein levels are shown as a percent crude protein, but this information alone does not tell the complete story. Comprised of building blocks called amino acids (AA), proteins are broken down during digestion and the individual AA are then re-assembled into muscle, hair, hormones, hoof and several other vital components. AA are classified as either essential or non-essential. Non-essential AA can be produced by the horse, whereas essential AA must be consumed as part of the diet. Lysine, for instance, is an essential AA that may be added to feeds as an individual ingredient.

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High-quality forages can supply a significant amount of protein. Other high-quality protein sources include soybean or flaxseed meals.

Vitamins

Vitamins are important organic compounds that the body requires to complete a variety of chemical reactions that are essential for growth and nutrition. They are divided into two categories: water-soluble and fat-soluble. Water soluble vitamins, such as the B-complex vitamins, dissolve in water and are easily absorbed into the body. Fat-soluble vitamins, including A, D, E and K vitamins, are absorbed in fat globules and then transported to the circulatory system. Excess water-soluble vitamins can be excreted in urine unlike their fat-soluble counterparts, which are stored in fat tissues and can build up over time if fed in excess. Not all vitamins need to be supplied by the diet, as the horse can produce some of the required B-complex vitamins on their own.

Minerals

Minerals are elements that are needed for the body to develop and function properly. Mineral requirements will vary based on age, activity level or situation such as during gestation and lactation. Minerals are classified as either macro minerals that need to be supplied in gram per day amounts, or trace minerals that are needed in milligram per day amounts. The typical macro minerals include calcium, chloride, magnesium, phosphorus, potassium and sodium. Common trace minerals include copper, chromium, iodine, iron, manganese, selenium and zinc. Mineral ratios are crucial to monitor in a horse's diet. One of these is the ratio of calcium to phosphorus which should be approximately 2:1 to ensure the horse can efficiently use the calcium in the diet.

Prebiotics/Probiotics

Prebiotics and probiotics are not considered nutrients and instead are referred to as functional ingredients focused on improving and balancing the microbiome (the populations of microbes, such as bacteria, both good and bad) in the digestive tract. The microbiome is very sensitive and stressors such as travel, disease or even simple diet changes can throw microbial populations out of balance, impacting horse health and performance.

Prebiotics are microbial nutrients that are specifically added to feed the good microbes in the gut which stimulate their growth and activity levels. Examples of prebiotics would be functional fibers such as psyllium or beet pulp, fermentation extracts and yeast derivatives.

Probiotics are actual live microbes (yeasts or bacteria) that are fed to increase the population of beneficial bacteria. These microbes assist with the digestion of proteins and fiber as well as limiting the growth of harmful microbes. Since probiotics must reach the gut alive in order to benefit the animal, it's important that they can survive the feed manufacturing process (e.g. heat from pelleting) and exposure to the acid in the stomach.

Supplements and Other Ingredients

Supplements are usually considered additional ingredients fed to your horse that supply nutrients that are lacking in the daily diet. For some horses their dietary and nutritional needs can be met through a typical feed ration, however some hard-working horses or athletes may require additional calories. Before adding a supplement, review with your nutritionist or feed company to ensure the feed regimen matches with the level of physical activity of your horse.

Supplements may also be beneficial if you have a horse with a chronic health condition that is being treated with a medication, is on a forage-only diet or has a medical condition, such as ulcers.

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Speak to your veterinarian and nutritionist if you feel there is a need to provide supplements especially, if your horse is taking a medication as the ingredients in some supplements may interfere with its efficacy.

Other ingredients that you might find listed on the feed tag include:

- preservatives such as propionic acid which are commonly added to molasses (and some hay) to reduce the risk of mold and spoilage.
- lysolecithin helps the horse to improve fat absorption and utilization. This can also improve the ability of the horse to absorb fat-soluble vitamins.
- butyric acid is a major food source for the cells that line the intestinal tract and help keep the intestinal lining healthy and functioning.

In Conclusion

Providing your horse with a diet that meets their nutritional requirements is one of the most important things you can do as an owner. Ingredient quality can be highly variable, so begin by buying feed from a company you trust – one that takes measures to safely source ingredients and follows good manufacturing processes. Most feed companies have multiple product lines formulated to meet the needs of different horses including athletes, seniors and easy keepers, so talk with your feed company representative to determine which feed is best for your horse.