

Energy: Buzz Word or Buzzy Horse?

British Equine Nutritionist Ruth Bishop, author of “The Horse Nutrition Bible,” explains how slow-release and fast-release feedstuffs affect horses’ energy levels.

While the amount of energy a horse eats is fundamental to its overall well-being, to most riders it is the effect of that energy on the horse that is most profound. Some horses have far too much energy, others gain weight at the mere sniff of the feed scoop, and others evaporate once the work level steps up.

It was often said that a trainer knew when a horse was ready for the competition if it stamped its way round the box and was generally fighting fit. Nowadays, it is entirely possible to have the horse ready for competition without it bursting out of the stable. In fact, as riding areas and time to ride become more limited, and manners count for everything, looking at the sources of energy in a horse’s diet could make for better and safer riding.

Energy Requirements

In horse diets, energy is measured in units of megajoules of digestible energy (DE), rather than the calories humans talk about. For comparison, 1 MJ is equivalent to about 240 food calories, (the size of a small chocolate bar), and most working horse require 80-110 MJ per day in total, with those in extremely hard work (racing, endurance) requiring up to 20-30 percent more than this. How this energy is supplied makes the difference between a mannered ride, and 1 hour of jig-jogging and shying at bags in the hedge.

Energy Sources

Every feed contains some energy, with the exception of water and pure minerals. The lowest energy feed is straw, and the highest is fat, with everything else in between.

The energy content of a feed is calculated from its chemical characteristics. The fiber, starch, sugar, fat and protein components all contribute some of the energy value of a feed.

At the cellular level, horses are mainly carbohydrate, not fat, burners. The carbohydrate comes from fiber starch and sugar in the diet. Fat and protein contribute less, being smaller components of the overall diet.

Slow-release Carbs

Fiber, the largest supplier of energy to most horses, is often dismissed as a low-energy bulker in the form of hay and straw. However, it is a complex mixture of carbohydrates, digested by microbial fermentation in the

hindgut. Different fiber sources are digested at different rates and provide different amounts of energy. This fermentation means the energy released into the bloodstream by this process is constant. This steady release is why fiber feeds have the deserved reputation of not exciting horses. Feeding large amounts of low-energy fiber, such as hay, will not provide enough energy for sustained work – such material takes time to digest, contributes to a hay belly, and bind significant amounts of water up in the process, meaning a horse carries unnecessary weight. However, with modern feed ingredients such as soya hulls and sugar beet pulp entering compound feeds, feedstuffs high in fiber no longer have to be low in energy.

Fast-Release Carbs

Starch and sugar are almost the opposite of fiber, being rapidly broken down in the small intestine by the horse's own digestive enzymes. The end product of digestion here is sugar, which is rapidly absorbed into the bloodstream. So, in comparison to fiber, these provide "fast energy," available soon after a meal, which is sometimes too fast for excitable types and contributes to ill-mannered behavior. In addition, as the horse has a finite capacity to digest starch and sugar, anything not digested in the small intestine, (which comprises only 20 percent of the digestive capacity of the horse) passes through into the hindgut, where the microbes there are not capable of handling starch. Such overloads are also thought to contribute to fractious behavior in horses fed high-starch diets.

Starch and sugar are not all bad, however. Some starch is necessary to keep muscle glycogen stores maintained, and at brain level, glucose is the only food this hub of the central nervous system recognizes.

Slow-release Fat

Large amounts of research in recent years have been focused on the use of fat as an alternative energy source for horses. Fat is easily digested and absorbed in the small intestine, but its use as a muscle fuel is slower than starch or sugar, and this is why it has a reputation for being a good slow-release energy source. Fat is energy-rich, containing three times the energy of oats. This is both good and bad – good because not much is needed to replace or supplement hard feed, but bad because it can only go so far in replacing starch both metabolically and practically. A working horse requires about 28 lbs of food per day. Replacing some hard feed with fat poses practical feeding challenges – how to feed fat, and what to fill the "gap" left by some absent hard feed. If the horse makes this up with low-energy forage, all it will get is a big belly.

Protein

A horse doesn't generally use protein as fuel, but when it is in excess levels in the diet, it can be broken down in the liver and used as energy or stored as fat. This occurs typically in horses out at grass for any length of time.

Feed Energy Levels

It's not just the energy content of the feed you need to worry about, but also the source of those calories.

Springy Steps

Horses' behaviors reflect their individual personalities. If your horse is the type that looks for an excuse to act unruly, then you have to sit tight and ride through it. The horse's diet, however, can have an effect in some cases; certainly a real slug won't metamorphose into an equine firework by the addition of oats to its diet, but the wrong diet can exacerbate ill manners in a sharp horse.

What is it about feedstuffs that causes excitability in horses? From time immemorial there have been reports of ill-mannered horses related to their diets. The saying "full of beans" came about as a result of the traditional bean diet of draft horses resulting in unruly behavior. What beans and oats have in common is that they are high in readily available energy sources, in the form of starch that is digested and absorbed rapidly.

A rapidly available influx of energy can put the spring in anyone's step, as can the digestive discomfort of feeding too much starch at any one time, as it bypasses the small intestine and hits the large intestine.

Nibbles

Dietary tips that can help riders of unruly horses

- Avoid high-cereal feeds. High-oat diets contain plenty of rapidly available starch. Also, by their design of including flaked or rolled cereals, sweet feeds have more capacity to heat up a horse than pellets, which, unless they are a racehorse pellet or equivalent, contain less starch. Cereals are digested faster than fiber sources, and are more likely to give quick-release energy. Some low-energy mixes are high in flaked cereals, so check the ingredient list.
- Keep the diet high in fiber and if necessary, fat. Don't give the horse the excuse of readily available starch-induced bad behavior.
- Feed according to the work being done today, not for the future. Feeding too much energy will not only precipitate high spirits, it could also cause a bout of tying up. Keep to low-energy products if the horse is stabled for most of the day, and make sure there is plenty of forage to keep the horse

occupied.