

# Preventative Health Care Series - Part Three

## Making "Horse Sense" Out of Nutrition

All horses love to eat, but what they eat can play a big role in their overall health. Several disease or health related issues can be prevented by a nutritionally balanced diet. Through awareness of dietary management, such diseases as colic, laminitis/founder, diarrhea, gastric ulcers, heaves, equine metabolic syndrome/obesity, and developmental orthopedic diseases may be avoided.

Providing our horses with adequate nutrition is really quite simple and just requires some basic understanding of the horse's digestive process, knowledge of nutrition, and some "horse sense."

### Horse Digestion

The horse is designed to utilize forages (pasture grasses and/or hay). The horse starts the digestive procedure by prehending with incisor teeth and chewing and grinding with the numerous premolars and molars. The chewing process breaks the feedstuff into a smaller size and adds saliva/bicarb to the diet. The food bolus then travels down the esophagus to the relatively small equine stomach, which is continuously producing stomach acids to start digesting the feedstuff. Then enzymes in the small intestine further break down fats, carbohydrates, sugars, and amino acids. This process will take 2 to 6 hours, resulting in the absorption of 100% of the simple carbohydrate/starches, 60% of the protein, 95% of the fat, vitamins and minerals. Then the feedstuff enters the hindgut or large intestine. Bacteria present in the hindgut ferment quality forage fiber into volatile fatty acids which produce approximately 70% of the horse's energy. The transit time in the hindgut is about 18 to 40 hours as the volatile fatty acids, more protein, vitamins B and K and phosphorus are being absorbed. Lastly, the small colon absorbs water and results in the end product...manure.

### Basic Nutrition

Horses need water, energy, protein, vitamins and minerals in proper amounts and balance. Nutrient deficiencies, imbalances, or excesses can lead to health and performance problems.

**Water:** Water is absolutely vital and needs to be clean, fresh, and abundant.

**Energy:** Carbohydrates, the primary source of energy, are produced by digesting forage and/or grain. Fat is another source of

energy and provides 2.25 times more energy than carbohydrates. Energy needs are tailored to each individual horse based on level of activity, body condition, age, etc.

**Protein:** Protein is essential for the formation of muscle, hormones, hooves, and hair. Young growing horses have a higher need for protein, with all mature horses having a lower protein requirement. The exception would be the pregnant or lactating broodmare, horses in intense training, or horses on protein deficient diets, ie poor quality forage.

**Vitamins:** Vitamins are needed in small amounts but have a big role. Vitamins help prevent damage to tissues and are biologic catalysts that function for proper growth, development, health, and reproduction.

**Minerals:** Minerals are very sensitive to imbalances and interact with each other. An excess of one mineral often creates a greater need for another. Strong bones require the appropriate amount of calcium to phosphorus, but also require several of the other trace minerals. Mineral should NOT be indiscriminately used in the young growing horse, and should be balanced based on the forage fed. Imbalances, especially excesses, are probably responsible for more orthopedic problems than deficiencies.

### "Horse Sense"

Let us start by reviewing a horse's eating behavior. Because horses have a relatively small stomach which is continuously producing acid, they are designed by nature, to continuously wander and graze. If available, horses will graze 18 to 20 hours a day. Horses are hindgut fermenters, allowing them to be very efficient in utilizing quality forage (grass/hay) to produce energy. It is that simple.

But with the domestication of the horse we have decreased the amount of grazing time by stall confinement, work, training or pleasure riding. So grains were introduced to meet the horse's energy and caloric needs, as grain has more energy per pound than forage. But problems develop when the diet doesn't consist of enough forage. The result is an acidic gastrointestinal system, which in turns kills the good GI bacteria. Then we get big problems: colic, diarrhea, endotoxemia, and laminitis. Cereal grains can also provide too much energy and may potentiate developmental orthopedic problems.

So how are we to feed our domesticated horses? Like a horse! The main point is to provide good quality forage. Hay should be



Christine Wilkin, DVM, with her Hanoverian mare, Caliente GH.

harvested young, be green, leafy, and free of mold, dust, and blister beetles. Pastures need management; weed control and fertilization. Then be aware that forage alone does NOT meet all the nutritional requirements. Forage will provide energy, fiber and protein, but our horses also need vitamins and minerals that are balanced to the forage feed; ie. alfalfa is higher in calcium than a grass hay.

Additional energy and protein will need to be supplemented to growing horses, pregnant and lactating broodmares, horses in moderate to intense training, or horses with poor to thin body scores. There is a multitude of grain products available but they are not all created equal. Look for sound nutritional products that complement your horse's forage diet and current needs. Select products that are of high-quality and from a reputable supplier.

### Take Home Message

Keep the horse's diet simple: good quality forage, balanced vitamin and mineral supplementation and water, will meet most horse's nutrient needs. And note that nutritional requirements need to be tailored to each individual horse based on age, sex, intended use, location, breed, weight, and health history.

Stick to the basics. Meet YOUR horse's nutrient needs, by monitoring the quality and quantity of forage and addressing your horse's body condition. And if you question your horse's current diet or are having problems, seek a professional. Consult with your veterinarian or an equine nutritionist to analyze the diet and potentially perform hay and pasture testing.