



# U of M Horse Newsletter

*Providing research-based information to Minnesota Horse Owners*

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Volume 1, Issue 3

June 2005



## Insulin Resistance in Horses By: Dave Wright DVM Buffalo Equine

Equine metabolic syndrome or Insulin Resistance is gaining a great deal of publicity. It is a disorder of carbohydrate metabolism that is typically seen in overweight middle-aged horses and ponies, and is often associated with severe laminitis. Many horses that develop the metabolic syndrome are easy keepers. These horse often build up a high level of a stress hormone called cortisol. Among its many metabolic effects, increased circulating levels of cortisol increase blood sugar (glucose) and also inhibits the uptake of glucose into cells by antagonising the action of insulin. Persistent high blood sugar is known to be toxic to blood vessels in humans and it may be that high blood sugar contributes to laminitis in horses and ponies by damaging the blood vessels

in the hoof. Metabolic syndrome needs to be distinguished from Cushings Disease and a veterinarian needs to do a number of blood tests to make this distinction. Resting insulin and blood sugar are probably the most common screening test used to diagnose the metabolic syndrome. Blood must be taken following a minimum 5 hour fast and the horse should not be stressed or in pain at the time. Metabolic Syndrome can only be managed through diet and exercise; no drugs have been shown to improve the condition. It can be prevented by a weight control program. Pick up a weigh tape and begin monitoring your horse. If the horse is overweight, begin an appropriate diet. Obesity is a major cause of insulin resistance. Feed only grass

hay or grass alfalfa mix, with no grain. It is better to feed smaller quantities more often than to feed only one or two large feedings. Feed a trace mineral block, a loose mineral salt, or a ration balancer with the hay. If you suspect that your horse has laminitis due to metabolic syndrome, it is a good idea to schedule a physical exam. Radiographs can determine the severity of the laminitis and a series of blood tests can confirm an association with metabolic syndrome. You can also test your hay to determine its carbohydrate content. Timothy hay and mixed prairie grass hay is generally better than brome. Straight alfalfa is never appropriate for these horses.

## Ask The Expert

By: Erin Malone, DVM

Q: If I think my horse is colicking, should I immediately call the vet?

A: When a horse is in pain from colic, he will often look at his side and bite or kick at his flank or belly. More severe cases will lie down and/or roll, and in some cases, manure production will be decreased or absent. Often horses will improve when walked. If you know the colic is of recent onset and appears mild, you can try walking the horse and see if he improves without veterinary assistance. If it the duration of colic is unknown, or if the colic is more severe and unresponsive to walking, a veterinarian should examine the horse as soon as possible. Owners can learn to take pulses and to check the horse's gums for signs of dehydration or toxicity. If the horse's heart rate is over 45-50 beats per minute or if the gums are tacky, have a prolonged refill time or are off color, the horse may be dehydrated or toxic and needs immediate attention.

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## Up Coming Events

The 2nd Annual U More Park Open House will take place Thursday, August 18 from 4-8pm. For more information, [www.umorepark.umn.edu](http://www.umorepark.umn.edu)

February 11th 2006: Hands-on Horse Day at the U. Informational sessions on emergency care, wound management, specialty care, nutrition and demonstrations of new equipment. Contact Jan at 612-624-3434 or e-mail [vop@umn.edu](mailto:vop@umn.edu).

October 28, 2005. Equine reproduction, artificial insemination, brood mare management and foaling. Afternoon lab session on stallion collection, semen evaluation and shipping. Call 612 624-2268 or 800-380-8636 for more information.



Tying-up is the most common muscle problem in horses. Clinical signs include sweating, stiffness and reluctance to move forward. Specific causes for tying-up have recently been identified at the University of Minnesota. Sporadic tying-up is seen in horses that have always exercised normally, but suddenly exhibit signs of tying-up. It can be due to: exercise in excess of training level, exhaustive exercise, respiratory infections, lack of dietary selenium/vitamin E, or lack of dietary electrolytes and minerals. These horses usually recover with rest, adjustment of the diet treatment, and gradual return to exercise. Other horses have a chronic form of tying-up

## Tying Up in Horses

By: Stephanie Valberg, DVM, PhD

that stems from a very young age. A thorough investigation into their cause of tying-up is necessary and requires the cooperation of the horse owner/trainer, their veterinarian and often consultation with a medical specialist. A work-up for tying-up involves evaluation of urine and serum electrolytes and minerals, and evaluation of muscle biopsies, all commonly performed at a vet clinic. One cause of chronic tying-up in Quarter Horse-related breeds, Draft horses and Warmbloods is a metabolic defect called polysaccharide storage myopathy (PSSM) and

appears to be inherited. Horses with PSSM store an excess of glycogen in their muscle. Treatment of horses with PSSM involves supplying them with feed that maintains low blood sugar and low blood insulin concentrations (no grain and a fat source such as corn oil or rice bran) combined with regular daily exercise. Over 90% of horses will improve dramatically and return to full athletic performance by following the recommended changes in diet and exercise. Research indicates another cause of tying-up exists in Arabian, Standardbred and Thoroughbred horses,

called recurrent exertional rhabdomyolysis (RER). Muscle stiffness usually occurs when exercise and excitement combine, such as at a horse show or when being held back to a slower pace than they desire. The approach to treating these horses is to minimize excitement and stress and substitute part of the grain ration with fat supplements containing rice bran. Specialized diets have been formulated for this purpose by the U of M ([www.ReLeve.com](http://www.ReLeve.com)). More information on tying up is available at <http://www.academic-server.cvm.umn.edu/neuromuscularlab/>



Plumeless thistle is the most common species of thistle infesting NW Minnesota

pastures. In overgrazed pastures this plant often forms dense patches that limits cattle feeding and reduces pasture productivity. Plumeless thistle infestations can be reduced over time with annual applications of herbicides; however, access by spray equipment to many pastures is limited by steep slopes, rocks, trees, water and other physical barriers. The purpose of this research was to evaluate the effectiveness of donkeys in reducing plumeless

## Donkey Thistle Control

By: Vince Crary & Carlyle Holen, PhD

thistle infestations in established pastures. In 2003, a three year study was established in a grass pasture with moderate to heavy plumeless thistle populations at Deer Creek, MN. Treatments consisted of 1) one donkey and one cow/calf pair and 2) two cow/calf pairs. Some of the observations about feeding preferences include; 1) There are differences between donkeys in their preference for consuming plumeless thistle blossoms. All donkeys in the project grazed on plumeless thistle but some

donkeys have a greater affinity for consuming thistle blossoms than others. 2) Donkeys prefer blossoms over stems and leaves of plumeless thistle. Donkeys ignore the younger plants and do not begin grazing on plumeless thistle until blooms are present. 3) Plumeless thistle plants with heavy grazing pressure are stimulated to continue to produce additional blossoms. Many of the later blossoms produced by the plant will not produce seed. The number of plumeless thistle blossoms in sampling areas was reduced by 74% in 2003 and 87% in 2004 in the

donkey treatment compared to the cattle grazing treatment. Plant height was reduced by 10% and 40% in the donkey treatment compared to the cattle treatment in 2003 and 2004, respectively. Some pastures may have plumeless thistle populations that are too high for management by donkeys. For more information, please contact Vince Crary at 218-385-3000 or Carlyle Holen at 218-281-8691.

