Laminitis Alert

By Dr. John Kohnke BVSc RDA

Recent reports from Gippsland, Tasmania, South Australia and Western Australia, and many other areas where good autumn rains resulted in pasture growth, warn of an outbreak of laminitis and founder in horses and ponies.

The majority of cases occurred after early winter rains helped pasture to continue to grow before the cold weather set in. Cases of laminitis were reported within a few days to a fortnight after a number of mornings of heavy frosts in June and early July. In warmer areas, late autumn rains have kept a supply of green grass for grazing, with many horses being turned out for a 'strip out' and 24/7 paddock grazing on warmer winter days. **Both these scenarios are a recipe for laminitis and founder.**

Why is frosted grass so dangerous?

Grass and clovers naturally contain high levels of soluble sugars and non-structural carbohydrates (NSCs) during their active growth phase under suitable conditions. A heavy frost can abruptly stop plant growth and plants enter a stress recovery phase. They accumulate sugars in the stem base in an attempt to fuel their regrowth under more suitable conditions.

This results in the plant stems and leaves being more easily digested in the small intestine to release sugars, combined with the plant base becoming sweet to taste because it is more highly concentrated in sugars and more attractive to a grazing horse. Hungry horses, especially 'cresty' ponies or horses with Equine Metabolic Syndrome (EMS) and insulin resistance (IR), such as conditioned show hacks and other horses over 10 – 12 years of age which are turned out during the day, and particularly those at pasture 24/7, are tempted to consume large amounts of the 'sweet' sugary plants.

This can result in an increase of blood sugar concentration and cause a rapid elevation in insulin hormone levels in an attempt to maintain normal blood sugar concentration. If the circulating insulin level is already high due to underlying IR in a 'cresty' pony or over-weight horse, the surge of insulin is likely to trigger metabolic changes in the glucose supply to the lamellae of the hooves and devitalisation of the basement membrane and the onset of insulin-induced laminitis.

HINT 1: Remove High Risk Horses from Frosted Pastures

Within 4-5 days of a severe frost, or a series of frosts, dying plants can accumulate high concentrations of soluble sugars. If you notice severely wilted plants within 2-3 days following a heavy frost, remove high risk ponies and horses out of the paddock into a yard or onto a small grazing area under trees on higher ground which is less affected by frosts. If a pony has a hard 'crest' and lumpy tail-butt fat deposits, confine the animal to a yard and feed soaked hay at 1 kg dry weight per 100kg body weight per day. Provide a small feed of lucerne chaff (250g per 100kg body weight twice daily) in the yard to reduce calorie intake and supplement with Kohnke's Own **TRIM** to help maintain blood sugar control. Lucerne has a lower natural content of soluble and non-structural carbohydrates (NSCs) as compared to grass, cereal or clover hay (Refer to Hint 2 on how to soak hay).

HINT 2: How to Soak Hay to Remove Soluble Sugars

Soaking high risk grass hay in **double its volume of luke-warm water for 60 minutes** can reduce the soluble sugar content by 30 – 35%. Drain and air dry before feeding. Soaking lucerne hay in the same way can reduce its soluble sugar content by 25%. Good quality lucerne hay is lower in sugars and NSCs to start with, and it too is much safer when soaked as compared with good quality grass hay. First cut lucerne hay with a high C3 grass content must be soaked for high risk horses.

If all the hay is soaked, then some of the soluble trace-mineral, vitamin and salt content can be leached out into the soaking water. Daily supplementation with Kohnkes Own **Cell-Provide®**, **Cell-Vital®** or **Aussie Sport™**, as well as **Cell-Salts™**, will help to replace these essential nutrients for health and vitality.

HINT 3: First Aid for Laminitic Horses

If you observe a shortened, stiffer gait and painful movement with the front toes extended forward, immediately check for warmth in the hooves and a digital pulse. **Prompt first aid for laminitis is essential.** Confine the horse to a stable or small yard and ice the hooves with foot baths of iced water – (most horses and ponies will stand in a large bowl or shallow tub filled with ice blocks) - for as long as possible, or for at least 20-30 minutes, 3-4 times per day. Alternatively, wrap a 2-3 kg bag of ice around each hoof and secure with an elastic wrap to hold the bag in place while the ice melts. Replace when the ice melts away. Contact your vet for advice. Medication with anti-inflammatory medications, such as 'bute', are beneficial to reduce pain and swelling within the hoof. Standing the horse on wet sand also helps provide support to the soles and helps reduce the risk of internal hoof collapse.

Why Do Late Autumn Rains increase the risk of Laminitis and Founder?

If the season is uncharacteristically warmer than usual and late rains promote plant growth while still under the warm, sunny conditions, growing plants can accumulate high levels of soluble sugars and NSCs in their stems and leaves. This alone can increase the risk of laminitis in horses and ponies turned out 24/7 on growing pasture due to the overload of the soluble carbohydrates into the hindgut and the development of hindgut acidosis as a result of an increased fermentation and D-lactic acid production by Lactobacillis ssp. bacteria in the hindgut. This in turn can trigger a cascade of hindgut acidosis, death of other bacteria, release of toxins and absorption into the blood. These toxins can circulate to the hooves and shut down normal blood and glucose supply to the lamellae, weakening their attachments to each other and the pedal bone.

If a 'cresty' pony or EMS affected horse, is allowed to graze on this pasture 24/7 or if a sudden frost checks plant growth and concentrates the sugars, this type of pasture has a very high risk of triggering both insulin surge and a hindgut acidosis form of laminitis. Note: A horse does not always have to be 'cresty' or over-weight to have underlying EMS condition and a high risk of laminitis when grazing large areas of frost damaged pasture, as excess intake can cause an insulin surge as well as an overload of sugars into the hindgut.

HINT 4: Avoid Frosted Pastures

Stress from frosts causes wilting and triggers storage of sugars and NSCs in the bases of plants so that they can survive. Grass which was growing actively after a rain and then rapidly dries off during a hot, dry period is also dangerous as the stressed grass stops growing and stores sugars in its base to allow it to survive. Horses find these grasses more palatable and even on a sparse, over-grazed dry pasture, they will fossick enough to overload sugars and NSCs in insulin resistant (IR) horses if left out to graze 24/7.

Consider Using a Grazing Muzzle on Pastured Horses

It is not always possible to restrict grazing to the early morning or on frosted high risk pastures if, as an owner, you have to go to work, take children to school or do not have a suitable day yard to confine a horse during the high risk period from mid morning to late afternoon. In this case, consider fitting a grazing muzzle on an EMS sensitive horse or 'cresty' pony after around 10.00 am to limit the animal's 'hoovering' or continuous grazing habit on high risk pasture during the day. On return home after 5.00 pm, the mask can be removed for 30 minutes grazing until twilight. The animal should then be confined to a yard or stable overnight and fed soaked hay to limit soluble sugar intake. It is not wise to fit the grazing muzzle overnight as restricting feed intake for as little as a 12 hour period, could trigger a potentially fatal metabolic syndrome, such as hyperlipaemia, in an over-weight or 'cresty' pony within a few days.

HINT 5: Making Lucerne Safer to Feed

Besides soaking lucerne hay, simply bashing it on the floor or over the edge of a drum to remove the leaves and save the more fibrous stems, significantly reduces NSC content for horses with EMS or IR. The stems can be fed to high risk horses, with the leaves being mixed into the feed as lucerne chaff for other horses.

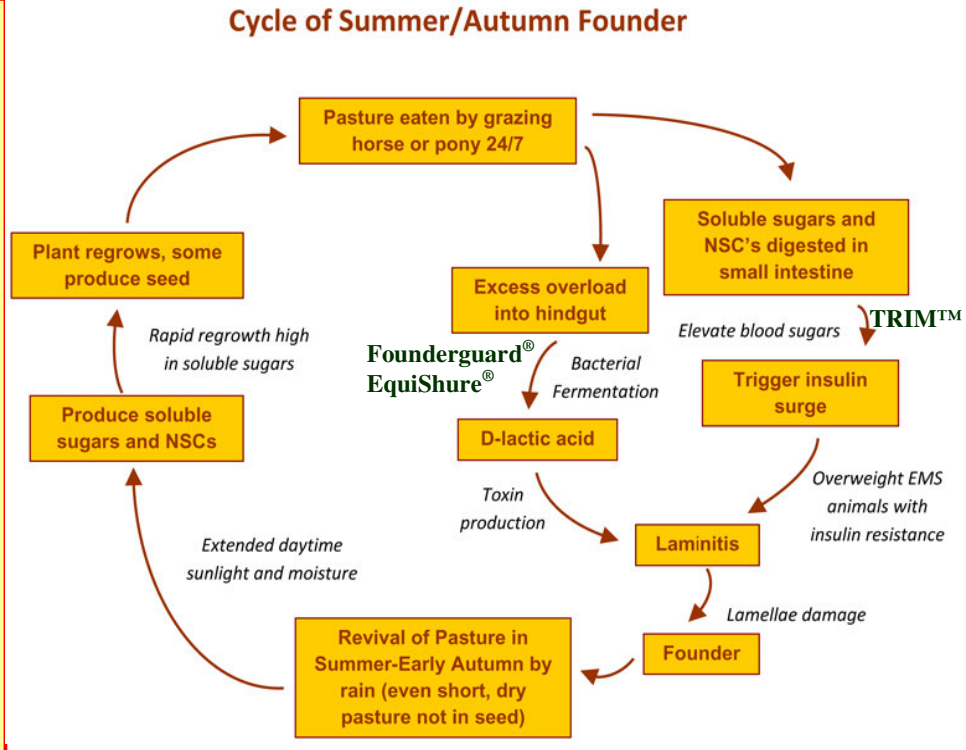
Why confine high risk horses to a yard during the night?

There has recently been a lot of mis-information circulated which suggests that high risk horses should be turned out at night and restricted during the day to reduce their intake of soluble and NSCs from 24/7 grazing. Although studies have shown that growing plants contain the lowest fructan sugar content in early spring and carbohydrates in autumn between the hours of 10.00 pm to 10.00 am, which suggests night time grazing is safer for high risk horses, these studies have not taken into account the instinctive grazing habits of horses where they can consume up to 40% of their total daily intake of forage before midnight. Therefore, it is generally safer to confine them at night and feed them a hard feed of lucerne chaff or soaked hay as well as restrict grazing access from 8.30 am to 10.00 am in the morning and from 4.00 pm – 5.00 pm in the afternoon in two short turn-out periods, or by fitting a grazing muzzle during the high risk periods during the day.

HINT 6: When to Use Founderguard®, Equi$hure® or Trim™?

Theoretically, the hindgut acidosis resulting from an overload of fructan sugars, soluble sugars and carbohydrates by excessive grazing of grass and clover pastures, can be suppressed by dosing with Vetsearch Founderguard® or neutralised by feeding KER EquiShure® in a hard feed.

However, in the case of 'cresty' ponies and over-weight, EMS horses consuming frosted grass and high sugar grass hay, the uptake of soluble sugars from the small intestine can trigger an insulin surge and lead to insulin-induced laminitis in an already insulin resistant animal. In this case, Kohnke's Own **Trim**™, which contains specific nutrients which have roles in sugar metabolism, slowing insulin reactivity and assisting fat metabolism, would be the product of choice to help maintain blood sugar levels. Many owners opt for a complete approach by supplementing with **Trim**™, as well and Founderguard® or EquiShure®, when faced with a laminitic horse or pony, irrespective of the underlying cause.



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