

## BEATING THE HEAT

When temperatures are soaring, know how to recognize the signs of heat stress – for both you and your horse.

by Karen Briggs

Welcome to another scorching summer – the kind of season when the impracticality of black leather boots, wool jackets, and dark gloves really comes home! Since the show world isn't likely to embrace spandex track suits anytime soon, we're probably stuck with our show clothes, but we can learn to protect ourselves, and our horses, from the most damaging effects of riding and showing under extreme temperatures. Here are some hot-weather tips to keep you cool under pressure.

### DEHYDRATION AND YOUR HORSE

When the heat and humidity are high, your horse is at risk for heat stress and dehydration. Horses evolved as cold-weather critters, good at maintaining their core body temperature when arctic winds blow across the Mongolian steppes, but less skilled at getting rid of excess body heat when the weather gets steamy. The fact that they can sweat is a major advantage, of course, but in the process of sweating horses can lose 7-8 quarts of fluid per hour when exercising (and sometimes up to 15 quarts in extreme conditions). And water lost with increased respiration in hot conditions, only adds to the fluid debit column.

Under normal circumstances, the horse's body is 60% water. Lose 5-7% of his bodyweight as water loss, and he is mildly dehydrated (which can be assessed by pinching a fold of skin on the horse's shoulder and releasing it; if it takes more than two seconds to snap back, it's an indication of dehydration). Depression, dry mucous membranes (check his gums to see if they're moist or tacky), and a prolonged capillary refill time are other red flags.

At 8-10% water loss, dehydration is classified "moderate" – but there's little that's moderate about symptoms like weak pulse strength, poor jugular vein distension, and elevated heartrate. Even the ability of the skin cells to retain a healthy fluid balance is affected.

By the time a horse's water loss is more than 10% of his body weight, he's in big trouble. With severe dehydration, he'll look shocky, colicky, and disoriented, with cold extremities and looming multiple organ failure. Emergency rehydration measures (such as IV fluids) must be implemented to save such a horse – but it should never get that bad if we pay attention to hydration status and do everything we can to maintain a healthy water intake, particularly when horses have to exercise at 85 degrees Fahrenheit or above.

Along with fluid, horses lose electrolytes – the positive- or negatively-charged trace mineral salts that help their cells maintain their normal functionality – when they sweat. If the diet is not adequately replacing these lost minerals (primarily sodium, chloride, potassium, magnesium, and calcium), horses can suffer muscle cramping, cardiac arrhythmias, gastrointestinal distress, even loss of brain function.

Commercial electrolyte mixes, or a 50/50 mix of regular table salt and "lite" salt (potassium chloride, or KCl) can help a horse replace the salts he loses through sweat, and they're a good idea anytime you're asking an animal to exert himself in severely hot or humid conditions. A couple of caveats regarding electrolytes: avoid those with a high glucose or sugar content (listed as one of the first few ingredients), as the sugar will cause a glucose surge in the bloodstream, in

turn triggering an insulin release and resulting in hypoglycemia while exercising. Also, don't use electrolytes which contain bicarbonate – a sweating horse is already alkalotic, and bicarb will just compound this pH imbalance.

Don't wait until a horse is already dehydrated before you give electrolytes. High concentrations of these salts in the gut at that time, may actually pull water from the blood, increasing the body's dehydration level. Instead, go for the pre-emptive strike, administering electrolytes one to two hours before a stressful event (a hard workout, show, or long-distance shipping).

Afterwards, allow him to drink until satisfied, and administer more electrolytes by syringe. Studies done by the University of Guelph before the 1996 Atlanta Olympics taught us that many of our traditional ideas about cooling hot horses were wrong – including the idea that drinking deeply after exercise would trigger colic.

#### HANDLING HEAT STRESS

When the humidity is high, sweat doesn't evaporate on the skin nearly as well as it's meant to, so its cooling effect is lost. Under conditions like these, a horse's internal body temperature can rise very rapidly, and may continue to increase after exercise, especially if dehydration is compounding the problem.

Heat stress can sometimes manifest itself as tying up, when large amounts of lost electrolytes alter the ion balance in the horse's muscle cells. Or he might just seem unusually fatigued or muscle-sore and exhibit poor recovery from a work-out. As heat stress progresses, the horse's heart-rate and respiration rate will soar, and a rectal temperature might read as high as 41 degrees Celsius. He will continue to sweat profusely, but the sweat won't be evaporating, so he'll likely be soaking wet. Left unchecked, a horse in heat stress will start to look disoriented or stagger, and there may be muscle spasms. He may get what endurance riders call "thumps", in which the diaphragm or flank muscles start jerking spasmodically. In severe cases, he may even collapse or appear to be having a seizure.

A horse in heat stress needs emergency cooling. Here's where a lot of the traditional notions about cooling horses safely need to be thrown out the window. Studies done by Canada's University of Guelph, in preparation for the equestrian events at the 1996 Atlanta Olympics showed conclusively that cool water on the large muscle groups of the horse's barrel and hindquarters does no damage at all, and, in fact, is one of the best ways to cool down a stressed animal. So employ what, at the '96 Games, became known as the "Canadian carwash" method of cooling (and was credited with saving the lives of a couple of the British eventing horses): slush large amounts of cool water all over the body of the horse, scrape it off immediately, and repeat, repeat, repeat. Aim water, as well, at the large blood vessels running inside the hind legs, and along the jugular groove – the cooled blood will be carried into the core of the body and help bring temperatures down.

In addition to the carwash, make sure you get the horse out of the sun and into a spot with shade and good ventilation. Seek out a fan if you can (a misting fan is even better). Apply ice packs to the horse's head and neck. Offer cool water to drink -- it's an old wives' tale that a hot horse's water intake should be restricted; when water enters a horse's stomach, it empties again very rapidly, so the liquid can be distributed where it's most needed. As a result, there's little to no chance of triggering colic.

So offer as much fresh water as a heat-stressed horse will drink, but don't be surprised if the horse won't partake – one of the problems with heat stress and dehydration is that when a horse

has lost a significant amount of fluid and sodium through sweating, his body sometimes still doesn't send out the 'thirst' signal. If he is clearly dehydrated and refuses water, you may want to consider having your veterinarian administer IV fluids.

Finally, remember that even a horse who looks like he's over the worst of it is probably still running a higher-than-usual internal temperature hours after an episode of heat stress. The worst thing you could do to such a horse is put him in a closed trailer and ask him to endure a three-hour drive home! Instead, delay your trip home till he is completely recovered or try to find a local farm where he can stay the night.

#### HUMANS AND HEAT STRESS

When you're riding and showing in the heat, it's easy to get so caught up in the excitement that you forget to monitor your own symptoms of heat stress as well as you do your horse's. But you are just as vulnerable to the effects of the sun, so be smart and take precautions!

Of all the nutrients you take into your body, none is more crucial to your health and athletic performance than ordinary water. Water accomplishes a wide array of functions in your body, including helping you regulate your internal temperature, helping to carry nutrients through the body, and acting as a coolant for working muscles. Humans get rid of wastes by mixing them with water and expelling them from our system as urine and sweat. When sweat evaporates on the skin, it also helps cool us in hot weather.

Without sufficient water, we become dehydrated, a state which affects almost every bodily system. Most importantly, a dehydrated rider doesn't think straight -- and that can be a dangerous scenario.

Dehydration is a bit of a Catch 22. By the time you register that you are thirsty, chances are you're already dehydrated, since the thirst reflex usually lags behind the body's need. A pounding headache is another sign of dehydration.

To ward off dehydration, get in the habit of carrying bottled water with you wherever you go, especially to the barn and to horse shows. (Other beverages, such as milk, fruit juices, and sports drinks may be good choices too, but water is the best way to go -- it's 100% re-hydration and zero calories in one package!) Keep those fluids coming throughout the day, even when you're not feeling thirsty; this advice goes double in hot, humid conditions.

In a horse-show situation, especially in the summer months, avoid coffee and tea, both of which act as diuretics (substances which encourage the body to lose fluids). Alcoholic beverages are also diuretic in nature and a no-no for successful athletic performance. And you should also avoid sugary, carbonated beverages -- especially caffeinated colas, which may be the worst of all worlds! Women who are feeling premenstrual may also want to steer clear of high-sodium beverages such as some vegetable juices, like tomato and V-8; the high salt content may increase fluid retention and make it difficult to get those breeches zipped up.

You're well-hydrated if you urinate every two to four hours, and the color of your urine is light to clear; darker urine means you need to increase your fluid intake.

In severe conditions, even diligent re-hydrating can't protect you from heat stress. Even the young and the fit can be at risk -- but you can help protect yourself with these strategies:

1. **ACCLIMATE.** If you know you're going to be showing in the heat of the day, make yourself school under similar conditions. Start with short rides and work up to an hour or more, so that both you and your horse are accustomed to the conditions before you add the stress of competition. Increase the physical demands you place on both you and him gradually.
2. **KEEP THOSE FLUIDS COMING.** Try to steadily replenish the water you lose as sweat, even if you don't feel thirsty. Drinking small amounts frequently (six to eight ounces every 15 minutes) is more effective than large amounts, less often. Stick to water or electrolyte-rich sports drinks and avoid sugary drinks (soda and fruit juice) or anything caffeinated (colas, iced tea).
3. **TAKE FREQUENT, SHORT BREAKS** out of the sun, but in a well-ventilated area.
4. **USE A SWEATPROOF SUNSCREEN, SPF 30 OR HIGHER,** and re-apply it diligently throughout the day.
5. **WEAR LOOSE-FITTING CLOTHING IN BREATHABLE FABRICS** – though this is not always possible when you're showing!
6. **WATCH FOR THESE HEAT STRESS SYMPTOMS:** loss of coordination and stamina, weakness, poor concentration, irritability, muscle pain and cramping, fatigue, blurry vision, headache, dizziness, nausea, confusion, or fainting. Seek shade, fluids, and medical attention if any of these occur.