

WHY DOES MY HORSE NEED ELECTROLYTES

by Michael Foss, DVM

The muscular activity of a ride produces heat and heat needs to be dissipated for the horse to continue down the trail. The main way for a horse to get rid of this heat is to sweat. Sweating is done by "sweat glands" which secrete water and electrolytes. An analysis of equine sweat shows that it contains sodium, potassium, chloride, calcium and magnesium. An important point is that these electrolytes are actually concentrated in sweat, compared to blood. So as a horse sweats, it is losing more electrolyte than it is water. It is easy for a horse to actually lose a pound of electrolytes during a ride!

Where do electrolytes come from? The horse normally has a small constant supply from the plants it eats. These salts are absorbed from the small intestine, go into the blood where they are distributed to the various body cells. The functions of the electrolytes are numerous and complex. Let's just say they keep you alive. Deficiencies of electrolytes are summarized as follows:

1. Low Sodium causes decreased blood volume which you see as dehydration.
2. Low Chloride results in "alkalosis" or a change in blood pH which causes poor gut function or colic.
3. Low Potassium presents mainly as weak muscles.
4. Low Calcium appears as weak muscles and "Thumps."

Combinations of these deficiencies contribute to tying up and exhausted horse syndrome. In milder forms all you may experience is decreased performance.

So why does my horse need electrolytes? When God designed the horse, the horse only needed to run long enough to escape a hungry predator. These short bursts of speed would produce minimal sweat, and the electrolytes were readily replaced by natural feeds before the next "escape" was needed. When we ask the horse to travel for 25 to 100 miles at once, we are certainly exceeding "design capacity." The further and faster we go, the more we exceed this natural capacity.

Common sense suggests to us that if you are using something (electrolytes) at an unnaturally high rate, then you should supplement it to prevent problems. Here is the "art" of electrolyte supplementation. Many factors contribute to sweat production. The most significant ones are temperature, humidity, speed of the horse, distance, amount of climb and conditioning.

Other factors will be diet, footing of the trail and your mental attitude. It is not possible to accurately measure how much your horse is sweating, nor can we predict the specific weather conditions and work load along the trail. In addition, each horse is an individual and some horses need more electrolytes than others.

How will you know if the electrolytes are working? From a veterinary point, we can take blood from your horse at the end of a ride and measure the blood level of electrolytes. As a rider you need to look for changes in your horse's performance. When did the horse start drinking? (Should be before the 25 mile point.) How did the horse feel? More energetic? Better pulse recoveries? Better appetite?

How do you put all this information together? First, there is no magic formula to fit all horses, but there is a "concept" to use. Electrolyte usage should be a planned project and should begin before the ride starts. Remember, you are preventing problems, not treating problems.

Administration of electrolytes has a maximal effect 6 to 10 hours after you give them. So what you want to do is give a "loading dose" the night before the ride. The next morning give a dose before the ride starts and then a dose every vet check. One last dose after the ride helps the horse recover more quickly. It is important to give the electrolytes at the end of the vet check so you do not disturb its eating and drinking pattern. When you electrolyte on the trail do so after the horse has drunk.

The dose to give is going to vary tremendously. If it is a slow cool ride, you will give very little. If you hit a hot humid day, you should give lots! (And slow down too!!!!) As a starting point, at a hot day ride use 2 ounces of electrolytes for a dose. For example, a 50 miler might do the following:

- 8 p.m. Friday night, 2 oz.;
- 4:30 a.m. Sat., 2 oz.;
- vet check 1, 2 oz;
- vet check 2, 2 oz;
- vet check 3, 2 oz;
- finish, 2 oz.

Experience will teach you how to adjust dosage from here. If it is cooler, you would keep the same frequency, just give a smaller dose. If it is really hot and humid, you might give a bigger dose. The 1999 World Championship Endurance Ride gave a good example of electrolyte usage. Some of the front running horses were getting 6 ounces of electrolytes at each vet check!

What kind of electrolytes should you use? There are many products out there. Most are not appropriate for endurance use. If they contain "Bicarbonate,"

they are contraindicated. If they contain more than 50% sugar, they are not formulated for endurance use. My personal choices are Enduralyte, Enduramax, and Perform N Win.

One final note: A dose of electrolytes the night before (or 8 hours before) a long warm trail ride is also beneficial.

Happy Trails.



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