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SUMMER ELECTROLYTE NEEDS

At this time of year, with summer heat, and elevated humidity in others, it's common to start considering including an if they should use an electrolyte supplement. But what are electrolytes and why are they important?

What are electrolytes?

Electrolytes are minerals that when in their solid form bond readily with salts, but when they are dissolved in water, breakdown into their component elements called ions.

Ions have a positive (calcium, potassium, sodium, magnesium) or negative (chloride, bicarbonate, phosphate) charge. These charges allow the conduction of electricity. The electrical charges carry vital signals across cell membranes and along nerve and muscle cells enabling functions such as:

- **Muscle contractions**
- **Blood volume control**
- **Regulate thirst**
- **Absorption of nutrients**
- **Organ function**
- **Body fluid balance**

So simply put electrolytes maintain physiological balance in the horse's body and if depleted can result in a severe disruption of bodily functions and potentially life-threatening changes can occur.

Fortunately, hay, grazing and additional feed is enough to replenish levels required by the horse daily however once the horse starts to

work harder and/or sweat feed alone may not be enough to fully cover the horse's needs.

Sweating

Sweat contains electrolytes and so when a horse sweats he will lose electrolytes.

Although this may make sweating sound like a concern sweating is a vital tool in helping the horse to stay cool. Exercise requires energy and utilisation of this energy produces heat, in fact 70-80% of the energy consumed by a horse is lost as heat. If a horse was unable to remove heat overheating would occur in less than 10 minutes.

55-70% of heat generated by exercise is lost through sweating and 25% by exhalation. Sweating in average ambient temperatures allows for fast evaporation and thus cooling however in hot climates and especially humid environments, the ability to remove heat is reduced, resulting in a body temperature increase which could lead to heat stress. As you can see horses with anhidrosis (the inability to sweat) would be in real danger of heat stress.

It's important to note that horses of all types and involved in all disciplines are at significant risk of heat stress as there are many contributing factors.



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Although the eventer or endurance horse is being ridden for longer periods of time the breed types competing in jumping and dressage are often larger, heavier horses and therefore at greater risk of over-heating, especially as a result of long periods of warm-up. It's also important to note that horses not sufficiently fit enough to handle the demands of competition should be monitored more carefully as they are at greater risk of heat injury.

No matter the horse or discipline it's vital all owners, trainers and grooms understand the signs of a hot horse, such as but not limited to;

- **Excessive sweating – horse completely covered in sweat and/or sweat running from the body**
- **Ataxia (unsteadiness resulting from a lack of muscle control) especially when stopping after exercise**
- **Blowing very hard (deep and laboured breathing)**
- **Panting (fast and shallow breathing)**
- **A high rectal temperature – above 40°C (104°F)**
- **Prominent blood vessels**
- **Horse may show little reaction to people or environment**
- **Horse may appear distressed**

Horses can lose between 4 and 15 litres of sweat an hour (depending on factors such as environmental temperature, how hard the horse is working and how fit the horse is). A 500kg horse consists of around 300 litres of water (both extracellular and intercellular) and so for example a loss of 10 litres per hour during exercise would be a loss of around 3% of total body water per hour.

Although research is still lacking it's thought that even a 1% loss of hydration can lead to a 4% fall in performance. However, for the well adapted healthy equine athlete 3% body mass loss does not seem to pose serious performance problems. Reduction in performance is not only due to the water loss but because of the large quantity of electrolytes (especially sodium and chloride) that are lost in horse sweat. Losing 10 litres of sweat is the equivalent to losing 110g of electrolytes (Marlin, D).

Key Electrolytes

Of the five main electrolytes (calcium, potassium, sodium, magnesium and chloride) sodium, chloride and potassium are the three most important and sodium is often considered the principle one as it's the main regulator of thirst. Therefore, salt is suggested as a daily addition to the equine diet. When sodium and chloride combine, they produce sodium chloride. Sodium chloride is more commonly known as table salt.

The thirst response in horses is a physiological prompt to drink to prevent dehydration under normal circumstances and is dependent for the most part on electrolyte balance. In cases of light water loss (such as water in faeces, urine, exhalation a light sweating), water is released but the level of electrolytes lost is minimal leading to a higher concentration of sodium within the blood. This causes the body to seek out water to replace the loss, and thus the horses thirst response is triggered, and water is received.

However, when the horse sweats heavily and/or for long periods of time water and sodium are both lost and thus the sodium

concentration in the blood is not so large and the horses thirst mechanism is not triggered. Therefore, some performance horses will not drink even though they are dehydrated.

Research has found that when given a choice horses prefer cold water however, they appear to drink larger amounts when it's cool rather than cold and so consider this when providing water after exercise especially to horses that tend to not drink well.

How much is in feed?

Horses cannot rehydrate just by drinking water alone, without electrolytes from feed and/or additional supplements the body cannot hold on to water and thus forage and feed need to be provided to ensure balance within the body.

The National Research Council indicates that a 500kg horse in no work (maintenance) requires 10g sodium, 40g chloride and 14g potassium per day.

If we have a look at the common feed stuffs used it's clear that some supplemental electrolytes may be needed. For example, in forage, which should be the basis of every horse's diet, levels of potassium are generally good with some hays containing around 1.75-2.5% which would be enough to cover the horse's daily needs. However, they can be low (0.05-0.5%) in sodium and chloride (0.5-0.75%). Therefore, even if a 500kg horse eats 2% of its body weight per day and nothing else, he would only get around 5g of sodium.

Therefore, even just to meet maintenance sodium and chloride requirements, horses must have access to a source of supplemental salt.

When horses are in work their needs increase and the level of sodium increases to 17.8g and chloride 53.3g per day for a 500kg horse in medium level work. Environmental temperatures, individual variances in digestion and digestibility of feedstuffs all effect the amount needed. Quality concentrate feeds will contain additional sodium and chloride so first check levels in your daily feed and then add the extra to reach the desired levels dependent on your horse's workload.

Regular table salt is approximately 61% chloride and 39% sodium and so 30g (approx. 2 tablespoons) of salt per day would be enough to provide 11.7g of sodium which would cover maintenance needs. Harder working horses would require more.

While salt can be provided via a salt block not all horses will utilise them enough to cover their needs. They are also hard to monitor and so for performance horses especially it's advisable to add a measured amount.

The key to a good electrolyte supplementation program is to first provide a balanced diet including the correct amounts of forage and/or concentrates along with enough salt to meet the horse's base sodium and chloride needs. Once this is in place a product whose electrolyte composition mimics that of sweat can be selected should the horse need one (i.e. be working hard and or sweating for prolonged periods).



Look for a supplement which contains sodium: potassium: chloride in a ratio of 2:1:3,8. Some will also contain magnesium and calcium and other trace elements, but these are generally of a lesser concern. Be careful when selecting supplements as some contain sugars to increase palatability. However, this often means that the levels of electrolytes are not enough so choose carefully.

When using an electrolyte supplement for a working horse it's advisable to provide it at the same level each day, trying to guess what your horse is losing is futile and changing it based on the workout you do each day is not worthwhile. Rather keep levels adequate and consistent. Also avoid increasing electrolytes to "load" before competition. If your horse has been on regular supplementation increasing suddenly will likely put the horse off its food/water at a time when it most needs it, cause digestive disturbances such as loose droppings and/or increase the amount that is excreted because if the horse isn't using the additional extras his body won't use it. Rather wait until the workload, and rate of sweating increases to provide the extra such as during the competition.

The same applies for horses not on electrolytes, adding them before competition won't fix months of under supply and so rather access your horse's diet well in advance to major competitions to ensure that you are providing what is needed daily. A horse starting competition on depleted levels is more at risk of issues.

The best way to provide electrolytes is in feed. Electrolytes can be given in water, but the volume the horse will readily consume will not allow a large electrolyte intake. Giving electrolytes in water should be a way of rehydrating the horse, not as a way of replenishing lost electrolytes. This must come through diet and/or pastes during competition. It's important to note that full replacement of electrolytes can take several days.

For example, a horse running a 120km endurance race could lose 500g of electrolytes. Replacing at an amount of 100g per day would thus take 5 days for full replenishment after competition. So, it is important that electrolytes be provided daily and not just during competition.

As with most things too much is not necessarily better.

Research has shown that larger levels of administered electrolytes may result in worsening of gastric ulcers. This should be kept in mind when deciding to use an electrolyte supplement however generally the recommended daily dosages in supplements do not correlate with the levels in the study and thus should cause no issue when used correctly.

Be careful when providing electrolytes to horses that may be dehydrated. The idea is that electrolyte supplementation will stimulate thirst and encourage them to drink, however there are horses who continue to refuse to drink despite supplementation and may end up further dehydrated.

When in the intestine, electrolytes draw water from the blood into the gut. This removes water out of the blood causing the concentration of electrolytes (particularly sodium) to increase and this as we have said previously switches on the thirst mechanism. If water is not available, the horse doesn't drink, or blood flow to the intestines is reduced due to exercise, giving concentrated electrolytes may worsen the dehydration by causing water to leave the bloodstream and enter the GI tract, which is not the area of most need.

Research suggests that electrolytes should be given approximately four hours before exercise. Allowing horses the opportunity to drink before they begin sweating. Depending on the sport, it may also be necessary to give electrolytes and fluids during and after competition, to help them recover more quickly.

Conclusion

In conclusion as with anything balance is key. For the average horse in little to no work a well-balanced diet containing adequate forage and additional salt is all that's needed. However, once the horse starts working, especially if in hot and humid conditions a balanced diet consisting of forage, concentrates, adequate salt and additional electrolyte supplements are needed.

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TESTIMONIALS

Dear Epol

My 18-year-old 17hh OTTB has been on Muesli for many years now. He only eats 3 kgs and looks stunning. Dapples every summer and so round!

I thought I'd send you a picture, so you can see how much he enjoys your feed!

Thank you

Rebecca Erasmus



INTRODUCING



NICE 'N EASY

BETTER TOGETHER

In 2019 RCL FOODS acquired Driehoek Voere which saw Equus become part of our stable. This brought two leading horse feed brands together; Epol with its scientifically formulated, perfectly balanced proposition and Equus with its proposition around blending nature with technology. The acquisition also brought new capability in the form of roughage processing to Epol. For the last 3 years the two brands lived side by side and continued to prosper with the support of the larger organisation.

We have now made a decision to streamline our offer by merging these two leading brands into a single broader offer under EPOL. This merge will take place slowly over time and starts with NICE 'N EASY which will now be packed in a 40 kg Epol Leisure bag.

REST ASSURED though that the product is produced in the **SAME** previously Equus production facility by the **SAME** committed team using the **SAME** formulation and quality ingredients to deliver the **SAME** great product.

LOOK FOR THE NEW BAG IN STORE & CHECK THE BAG TAG TO FIND YOUR NICE 'N EASY

