

## Electrolytes

The following questions are answered by Dr. Mark Greathead BVSc, MRCVS, founder and owner of Equine Nutrition Systems P/L (Horsepower Feeds and Supplements)

### **Q: Mark, as a beginning to our discussion, what are electrolytes?**

A: Well, the Oxford Concise Medical Dictionary defines electrolytes as, “A solution containing ions”, however, for a more practical definition, it suffices to say that electrolytes are the macro-minerals and trace elements that are lost in sweat. To be more precise, a horse’s sweat is made up principally of Sodium, Chloride, Potassium and Magnesium as well as trace elements such as copper, zinc, manganese, selenium, iodine and salt.

When we are talking about electrolytes, it should be remembered that they are made up of natural substances, and certain levels of **electrolytes are found in part of your horses everyday diet** – electrolytes aren’t just a white powder that you add to your horses feed.

### **Q: And why are they so important?**

A: Electrolytes play a crucial role in neuro-muscular function, in other words, the workings of the nerves and muscles. Quite simply, they are the **key to peak performance**, assisting in sustained exertion, the ability to relax and most importantly, to recover.

### **Q: How can you ensure your horse is receiving the optimal levels of electrolytes?**

A: There are two important factors to consider here. Firstly, what is the horses current diet, and secondly, how much is your horse sweating? This, of course, will be affected by their level of work, and the climatic conditions.

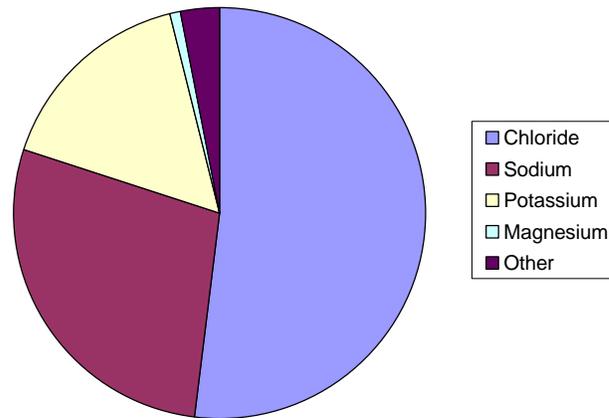
For horses on a hard feed diet –(concentrates, chaff and hay / pasture) Green hay / chaff contains most of the macro-minerals contained in electrolytes (with the exception of sodium), and a multi-species hay such as meadow hay, is generally a more balanced source of electrolytes than single species, such as lucerne.

As far as supplementation rates are concerned, a general rule of thumb is horses doing **more than 20-30 minutes** of work per day, or, horses that are in a humid climate, or, horses that show any signs of dehydration (more on that later) – then electrolytes supplementation will be required.

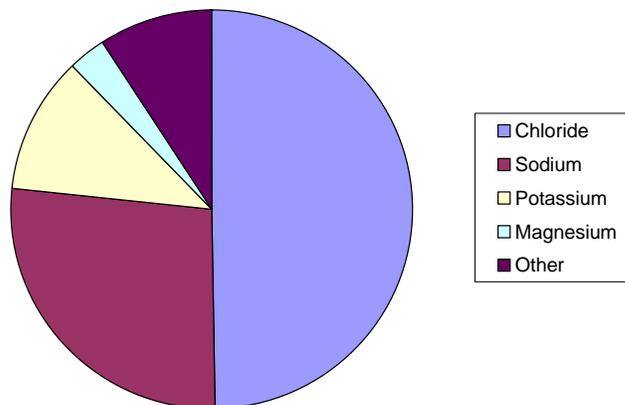
The range of supplementation will vary **from 40g to 100g**, with the amount varying, depending on what levels are existing in your horses diet.

When choosing what electrolyte to supplement with, look at products that closely mirror what a horse loses in its sweat, as some products contain additional fillers and sugars which aren’t necessarily required.

**Sweat**



**Horsepower Electrolyte 3**



**Q: Is there anything else we can do to ensure are horses aren't electrolyte deficient?**

A: Mineral Blocks! – Increasingly, we at Horsepower are recommending ad-lib supplementation via blocks, for both mineral top-up and electrolytes (particularly Sodium and Chloride)

**Q: Mark, what signs should we be looking for as an indication of our horse's electrolyte requirements?**

A: There are several indicators to keep an eye on. Firstly, **water intake**. Without wishing to sound old fashioned, providing your horses water in a bucket or trough that relies on manual refilling is a far better method, than automatic waterers, for the simple reason that you can see how much water your horse is drinking.

You could reasonably expect a horse in moderate work (30 mins per day) in a mild climate, to consume around **30 litres of water per day**.

If your horse is drinking very little, this can be a sign of inadequate sodium levels. Sodium stimulates the thirst centre in the brain, and if levels are inadequate, thirst is inadequate. Conversely, excessive water consumption, and the subsequent excessive urination, can be an indication that your electrolyte levels are excessive.

**Excess electrolytes** cause greater than necessary water intake and excretion (what goes in.....). The net result is **dehydration** – so it makes economical and plain common sense, to get the dose right for your horse.

After water intake, the next best indicator is the “**pinch test**”. Pull some skin out (from your horse's neck) and let it go, if it returns instantly, his hydration is spot on. If the skin returns to the normal position very slowly, he's dehydrated.

Note: Dehydration can be due to little (usually none) electrolytes, or too much, usually from 120g plus.

Another tell-tale sign can be your horse's manure. If the dung is forming “bullets” he is tending towards dehydration. On the other hand, if the manure is more like cow pats, it could be either a hydration problem, or a food intolerance. (We see less and less of these with Q feeds).

#### **Q: What about the performance of the horse, will we notice anything there?**

A: Dr. John Ewen, a respected New “Zuland” Equine Vet has found that horses with **muscle soreness on their back, chest and / or rump**, are often Chloride (as in Sodium Chloride i.e salt) deficient. Not chiropractic candidates as we so often mistakenly presume.

The solution is, increase their electrolyte intake (Dr. Ewen recommends Horsepower Electrolyte 3 at 70-100gm per day for 7-10 days.)

Usually soreness improves or disappears in that time and best thing is, many of these horses go on to **perform at a higher level than ever before**. They stride out better, move more freely and cover more ground. Adjust the ongoing level of supplementation as per previous guidelines, water intake etc)

Finally, any of you who have ever had a horse “ty-up” will know what unpleasant syndrome it can be. Also known as **azoturia**, this spasm of the larger muscles is often as a result of insufficient electrolytes and excessive work. Some of you may have heard old timers talk about their Clydesdales getting Monday Morning-it is, whereby these working horses that were used to clear fallen timbers, plough paddocks and pull crop stripping machinery, worked 6 days a week. They usually had a diet high in oats (as it was readily available and relatively inexpensive) and they were fed the same amount everyday, even on Sundays when they traditionally did no work.

Invariably, what would happen, was that on Monday mornings, they would be harnessed up and straight back into work again.

The build of acid from a diet high in grain, and then the levels of work fluctuating, often with little or no warm up or cool down, made these horses prime candidates to “ty-up”, and more often than not, they did.

In some cases they would appear unwilling, or unable to move, start to sweat and in some cases even collapse – on occasions they even died!

Fortunately, we now live in more enlightened times, and the importance of warming up and cooling down is far better understood (watch an elite athlete before or after their sport), as is the importance of regulating horses feed intake compared to their daily workload.

Dr. Pat Harris has performed research in Newmarket in the UK, where she has been able to,

“either reduce the frequency of episodes or to **prevent further episodes** in a number of recurrent sufferers by **appropriate electrolytes supplementation.**” (taken from “Are we still tied-up in the 21<sup>st</sup> Century’ – from the Werribee Equine Centre)

So, it would seem that electrolytes are the “key” to nerve and muscle function.

Remember , amongst all this electrolyte talk, to **take care of the basics** – warm up and cool down before and after competition; use feeds that are compatible to your horse (whether that be non-grain, non-oats or oats) and ad-lib blocks.

Do all this, and you are well on the way to having a happier, healthier horse, who performs better, for longer!

Footnote: Don’t be fooled into thinking electrolytes and dehydration are only something you need to concern yourself with in the hot, summer months. Recent studies have shown that horses in particularly cold climates can suffer from lack of water intake. In extreme cases this can be due to water troughs actually being frozen, however in some cases, it is just a reluctance to drink because the water is so cold.

Think about it, would you want to **put your nose into icy water** to get a drink in the dead of winter??