

## Vitamin E deficiency in Grevy's zebra (*Equus grevyi*)

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At port Lympne we have lost 7 grevy's zebra 5 all had similar symptoms but even with extensive post mortems we could not say conclusively it is and was vitamin E deficiency. So after doing some research into it I would like to talk about what vitamin E is and does and how your equids get deficient, the symptoms to look out for the supplements on the market and how to get them into the zebra, in the hope that you can go away with a better understanding and some helpful tips.

So what is vitamin E it is a fat soluble vitamin and it is an antioxidant which protects cells together with selenium prevents oxidation of unsaturated lipids.

There are 8 different forms that can be form in nature: 4 tocopherols and 4 tocotrienol. The most important being alpha tocopherol as it is the only form that can be stored for a short time in tissue and the only one that can be metabolized by the liver.

Vitamin E is considered the 1<sup>st</sup> line of defence against oxidation and selenium the 2<sup>nd</sup>. These 2 have a sparing effect on each other, Vitamin E is exhausted rapidly due to poly-unsaturated fatty acids in the tissues, so excessive exercise and stress can deplete the stocks of vitamin E quickly. Also excessive amounts of peroxides can attack unsaturated lipids causing the deficiency or it could be genetic deficiency of the gene decoding for this protein, Diet can play a part but I will be touching on this later.

The symptoms of vitamin E are:

- Ataxia or spinal ataxia basically poor balance, wobbly, and clumsy and bad coordination.
- Animals often appear weak, have difficulty standing with stiff muscles, muscle deterioration and heart arrhythmias may also be present and myoglobinuria is often a clean clinical sign in zebras and horses.
- The most important symptoms are myopathy and cardio myopathy.

So vitamin E deficiency is most commonly referred to as white muscle or yellow fat disease.

If your zebras don't have access to grass and they are just fed hay they may lack vitamin E due to the hay having poor levels of vitamin E, this is because tocopherol levels increase in young grass as it grows and decreases in maturity and seeding grass making hay a poor source as it is harvested in late stages of growth. Also leaching during hay making and the excessive storage times deplete the active vitamin levels.

At port Lympne we feed our zebras Charnwood zsl zebra pellet, but there are others on the market we were recommend thing by other zoos. Supplements for vitamin E are not few and far between with hundreds on sale most popular being equivite, mazuri, NAF and emcelle. We use emcelle as recommended by a leading nutritionist in the US. It is a water dispersible liquid, it has d-alpha-tocopherol and can be mix either into drinking water or as a top dress on dry feed. Some of the others are powder and more difficult to hid in feeds.

So how do you get meds/supplements into you animals?

Well at Port Lympne we are lucky that we are allowed to try anything if you can think it, buy it make it you can use it. For our zebras at the moment we give their emcelle for our Grant on a slice of bread and for the Chapmans on their pellet. For our last sick zebra, we used the normal pellet of all kinds, goat mix, horse and pony mix, alpha a, oats, bran mash, molasses and fruit and vegetable and the not so normal bread, blueberry muffin, gingerbread, flapjack, Jaffa cakes, polo, honey and peanut butter. The list goes on. The view is we would rather have a zebra getting meds and better with a none orthodox food item than to not eat their meds and get worse. So it's all about finding something yummy they may eat.

However, these signs alone cannot confirm vitamin E deficiency as these are some of the signs we seen in the 5 zebra but could never prove it was E deficiency that they had or died, but for these zebra when showing signs, we increased the vitamin E some by triple gave antibiotics, pain relief, multi vitamins and muscle relaxers to help and hope for improvement.

There are other illnesses that show similar signs like:

- A typical myopathy or sycamore poisoning caused by your equid eating the helicopters and/ or leaves of the sycamore trees so if you have any sycamore trees near your equids I urge you to get them taken down or move your zebras as this illness results in muscle damage to legs, heart and lung muscles.
- Also as zebras are thought to be more closely related to donkeys they may get Hyperlipaemia which is the presence of elevated lipids in the blood and is associated with periods of negative energy balance but normally effects overweight, obese equids.

So to conclude your zebra should have a balanced diet with a supplement of vitamin E with access to grass and hay so the get the higher levels of vitamin E in the early stage of grass growth. You could also body score and if you can weight your equids regularly to prevent obesity.

- Keep stress to a minimum and get meds into them by any means
- Call the vet ASAP if you see any of those symptoms.

If you need any advice or help on getting meds into animals, please feel free to contact me on the address below. [Vicotriss@aspinallfoundation.org](mailto:Vicotriss@aspinallfoundation.org)