Do you have a horse with poor hoof quality? Do you have an equine prone to horse hoof abscesses? Find out about the way that nutrition and the balance of minerals in your horse’s diet can affect horse hooves.

Horse Hoof Abscesses

There appears to be a direct relationship between the imbalance of minerals in some forages and the occurrence of horse hoof abscesses and or poor hoof quality. The usual profile of our UK forage and also much of that throughout Europe is one where a picture of high iron and high manganese blocks the uptake of low copper and low zinc. Where molybdenum is also high then copper absorption is further compromised.

A complicated relationship exists between all minerals and the way they compete for absorption sites in the horse’s digestive system. A very simple way of looking at this is to use the analogy of a lottery machine where in the lottery machine you have both iron and copper balls competing to get down one shoot.

How does all this affect horses hooves and horse hoof abscesses?

Zinc is present in high concentrations in normal hoof tissue and is critical for a variety of functions. It is vital for the assembly of keratin and keratin is the major structural protein from which hooves are made. Zinc is also essential for a variety of enzymes that every metabolically active cell needs and is involved in regulating the rate of cellular division,
cellular activity and cellular maturation. Think lottery machine, think ratios of manganese to zinc which are regularly over 30:1 and it is not too difficult to see that zinc deficiency is showing in our horses hooves in a number of ways. You might see:

- slow hoof growth
- thin walls
- weak connections (white line)
- weak flaky horn
- abscessing

The horse hoof abscesses are not surprising because when the hoof horn is weak at a cellular level, micro breaks in the structure make the keratin far more vulnerable to attack by organisms but there is more to it than just zinc. Copper also is vitally important for keratin health as along with zinc it enables a function which prevents fats and oils from oxidising. Oxidative damage to the fats in the hoof structure breaks the protective seal on the hoof, causing over drying (weak flaky horn) and weakening of the ‘glue’ between the cells. Copper also enables important enzymatic functions required for anaerobic metabolism in rapidly dividing cells. The all important sulphur cross bridges that hold keratin strands together are often compromised because these enzymatic functions are compromised due to copper insufficiency in the body.

Horse hoof abscesses can occur when mineral ratios are imbalanced in grass, hay or haylage.

The really surprising thing is that in cattle, deficiencies of copper and zinc have been linked
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Horse Hoof Abscesses and Poor Hoof Quality: How minerals can help!

strongly to:

- soft feet
- cracks
- sole haemorrhages
- abscesses
- thrush ("foot rot" in cattle and sheep!)
- laminitis

Supplementing extra copper and zinc for horse hoof health

Supplementing extra copper and zinc reduces these problems and for years now the agricultural industry have been formulating bespoke mineral supplements for farmers based on balancing to the mineral profile of the forage their cattle are eating. The agricultural industry know that evaluation of trace mineral levels in the diet is critical for cattle with hoof problems, they also know that high iron and manganese interfere with trace mineral absorption.

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So why, you have to ask, has the horse feed industry been routinely adding iron and manganese to all their broad spectrum mixes for years when the average profile of UK and European forage shows horses will be exposed to such high levels of these minerals from the day that they are born, that supplementing them could cause even greater problems and effectively cancel out the pitiful levels of copper and zinc added in those very same broad spectrum supplements?
So when you get an abscess in your horse’s hoof or your horse has poor quality hoof horn and or cracks, look first to copper and zinc levels and those all important ratios, balance to the common forage profile. There are other things which may be insufficient such as the B vitamins, or the amino acid methionine, but the major missing link in our opinion and experience is correct ratios of the most commonly deficient minerals in forage.

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