



# Iron

While this fact sheet outlines the known actions and requirements of iron for the horse never forget that no mineral or vitamin ever acts in isolation. Supplementing with a single mineral is often ineffective due to the complex interactions of chemical compounds in the body. Equilibrium and Lexvet were designed to overcome this by being a multi supplement of minerals and vitamins that are often deficient in the modern horse's diet.

## What does my horse need iron for?

A 500 kg horse contains approximately 33 grams of iron in his body – 60% of that iron is in haemoglobin in red cells, 20% is in myoglobin in the muscles, 20% is in storage and transport in the body and approximately 0.2% is in body enzyme systems.

Iron combines with the protein molecules of haemoglobin and myoglobin to transport oxygen to tissues which is vital for essential life processes.

## How much iron is needed in the diet?

It is estimated that most horses require 40mg iron per kg of food eaten per day. Pregnant and lactating mares and foals require approximately 50mg /kg of food eaten.

## What are plant sources of iron?

Forage has from 100-250 mg iron /kg and grains from 40-50 mg /kg.

## How is iron stored in the body?

Because iron is absolutely vital for oxygen transport and sustaining life the body is very effective at scavenging and retaining iron from the regular breakdown of red blood cells. Red cells have a life span of approximately 150 days and then they are broken down in the body. The iron is then stored in the liver where it waits to be used again.

## What are the signs of iron deficiency?

Iron deficiency is rare in the horse and usually confined to horses that are heavily parasitised, have chronic bleeding stomach ulcers, or sustain severe exercise induced pulmonary haemorrhage. Horses that are deficient in iron have microcytic (smaller red cells) hypochromic (paler colour red cells) anaemia. Anaemia typically presents with pale mucus membranes and reduced exercise tolerance. Horses look unwell and under perform. Blood tests are needed to confirm anaemia and the kind of anaemia present. Anaemia is not a disease but a secondary clinical sign to the primary problem.

Mare's milk has reduced levels of iron as the lactation continues. By then, foals often are eating the food put out for the mare and self supplementing with iron.

Iron is also lost in sweat –approximately 21mg per litre of sweat. A horse in heavy work can lose up to 25 – 30 litres of sweat in a day and could potentially lose 500mg of iron per day in sweat. Other minerals are also lost in sweat so to just supplement with iron is ineffective.

## What are the signs of iron toxicity?

The body can handle small excesses of iron in the diet by excreting it in faeces. Excessive supplementation, especially to a foal, can result in death from liver failure.

## Supplementing with iron – what are the guidelines?

Never single supplement with just iron – a balanced and appropriate multi mineral and vitamin supplement is required.

Feeding extra iron over and above daily requirements will not increase food intake, red blood cell count, haemoglobin concentration and packed cell volume. Excessive iron can decrease serum and liver levels of zinc but it will have no effect on serum levels of iron, calcium, copper and manganese.

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