Bighead in horses

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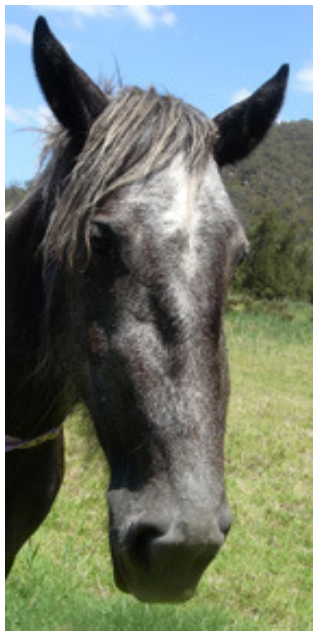
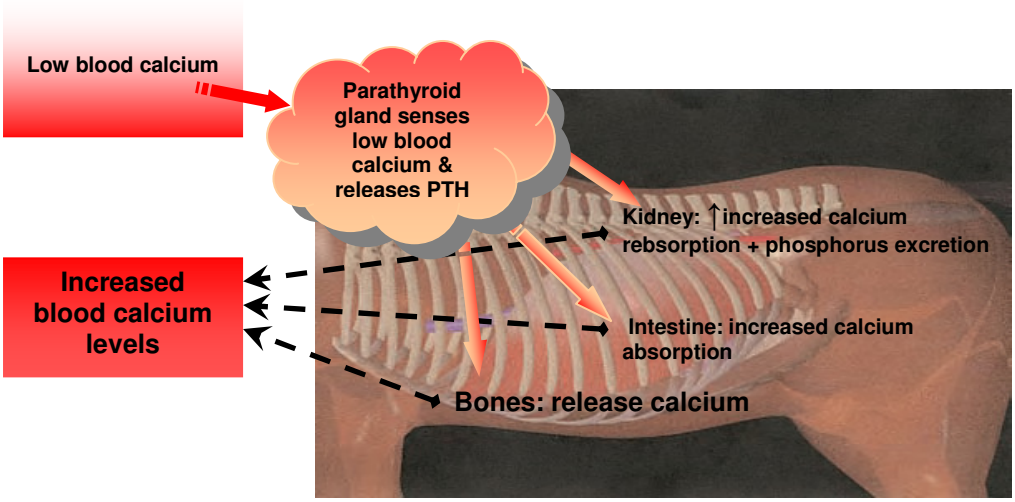


Also known as nutritional secondary hyperparathyroidism (NSH) or *osteodystrophia fibrosa* (OF), bighead was prevalent in the early 1900's in horses fed bran or mill wheat, hence the names 'bran disease' and 'millers disease'.

Since 1974 'bighead' has been widely recognised in horses on grain, bran-based and native pastures, and in horses grazing buffel, pangola, setaria, kikuyu, green panic, guinea and signal grass. These grasses, planted along the seaboards of Australia, contain oxalate – a chemical which interferes with calcium and phosphorus uptake in horses.

In bighead-producing grasses calcium is bound to oxalates and cannot be absorbed from the intestines – and if there is unbound oxalate in the grass it can bind calcium given as a dietary supplement - so although the diet may contain enough calcium, it cannot be absorbed and passes straight out in the manure.

As body calcium levels fall, the parathyroid gland releases a hormone (parathyroid hormone – PTH) to mobilize calcium from the bone and the bones gradually become replaced by fibrous tissue. PTH also causes phosphorus to be lost in the urine, to try and restore the body calcium-to-phosphorus ratio.



Clinical signs: Most clinical cases occur in horses in spring, summer and autumn, with prevalence ranging from 1-100%. The time of onset after grazing high oxalate pasture is 2-9 months. Affected horses may show any of the following signs: ill-thrift and a harsh coat, shifting lameness, tender joints, ligament and tendon injuries, difficulty chewing and dental pain, upper airway breathing difficulties or noise, a watery nasal discharge, and swelling of the jaws, maxilla, mandible and nasal bones.

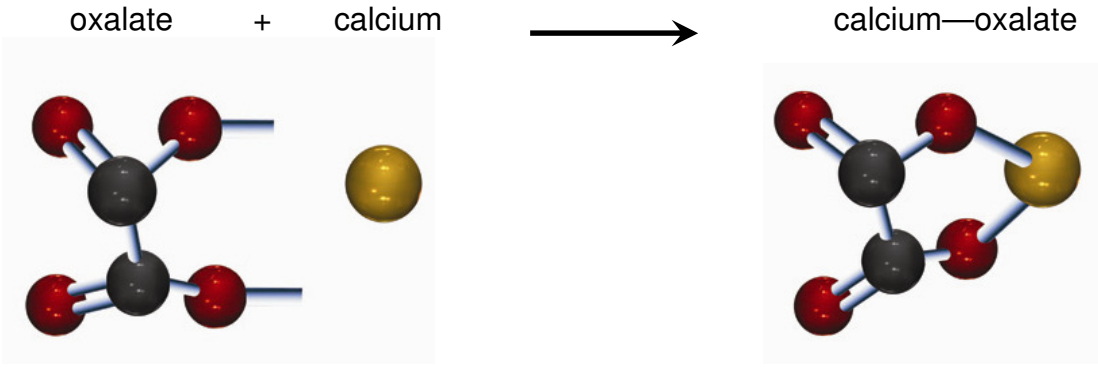
Treatment and prevention: Affected animals can only be treated by correcting the imbalance of calcium and phosphorous. Added magnesium and salt increases calcium absorption from the supplement - which should contain chelated calcium, phosphorus and essential trace and micro-minerals such as iodine and selenium that are deficient in Australian soils and pastures.

Why use chelated calcium?

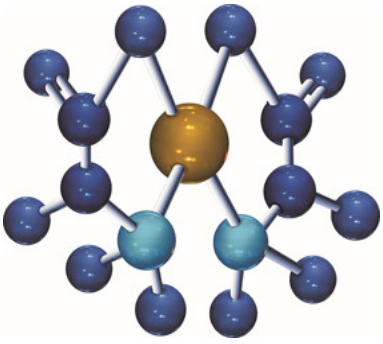
1. What a mineral is attached to determines how much is absorbed.
2. Prior to absorption, calcium must be chelated to protein.
3. By attaching calcium to amino acids absorption is much greater than if the mineral is attached to substances such as oxides or phosphates.
4. Chelated calcium is 64% better absorbed than calcium chloride.

The body chelates minerals to increase their absorption. Chelation is the suspension of a mineral between two amino acids. The key to enhancing calcium absorption is to pre-chelate it prior to ingestion. The word chelation comes from the Greek word 'chele' which means claw, and that is the concept of chelation – the mineral is held in a claw-like grip.

Calcium oxalate in grasses is nutritionally worthless AND when free oxalate in grasses gets into the horses gut, it can bind any calcium supplements fed to the horse — unless the calcium in the supplement is chelated.



Calcium chelated to methionine is protected from oxalate attack.



The most effective way to increase the calcium and phosphorus intake is to provide a correctly formulated mineral block – ordinary salt and mineral blocks do not contain adequate minerals. For horses receiving hard feed, a correctly formulated mineral powder can be added to the feed. It can take 4 to12 months to remineralise the bones, but the 'bighead' appearance may remain unchanged. Calsorb® and Bone Formula® contain chelated calcium - ensuring free oxalate cannot 'grab' the calcium from the supplements and maximising calcium absorption – and even horses grazing non-hazardous pastures need a mineral supplement – best provided by a well-formulated block or powder.