



# Iodine

When reading about or researching horse nutrition always remember that no mineral, vitamin or electrolyte ever acts in isolation – there are thousands of chemical reactions occurring in the horse's body at any given moment in time that involve complex interactions between minerals, vitamins, electrolytes, protein and energy sources.

While science can answer many questions there are many other questions that remain unanswered with some aspects of horse nutrition. Whilst we may not know all the intricacies of digestion and metabolism, an informed and astute horse owner can accurately assess their horse's performance and appearance which is the end result of the diet their horse is on.

## What is iodine?

Iodine is a trace mineral – which means it is required in relatively small amounts by the body and an excess supply can lead to toxicity issues.

## What is iodine needed for?

It is mainly used by the thyroid gland to manufacture the hormones thyroxine (T4) and triiodothyronine (T3). These hormones regulate body metabolism and are critical in the normal functioning of the body.

## What are the signs of deficiency or excess iodine?

Iodine deficiency and excess both present with the same clinical signs – an enlarged thyroid gland called a goitre, infertility in mares and weak or still born foals, poor coat, lethargy and a general dullness.

## What are the sources of iodine?

Many soils in the world are deficient in iodine but this may not be reflected in the uptake by plants. Plant matter

can contain from 0-2 mg/kg dry matter of iodine while some kelps can have up to 1850mg/kg dry matter.

## How much iodine does my horse require?

Horses appear to have a requirement of 0.1 to 0.6 mg/kg dry matter – a horse eating 10kg dry matter per day could ingest from zero to 20 mg of iodine per day when it would appear their needs are from 1 to 6 mg per day. Toxic levels appear to be in the 40 - 50mg per day range so most horses are getting safe and adequate amounts of iodine when their entire dietary intake is looked at. Most horses are also supplemented with a range of feed concentrates and mineral supplements that would top up their iodine intake.

Iodine excess is more of a problem than iodine deficiencies due to excessive feeding of kelp supplements in most cases. Given the relative lack of iodine in soils and plants most horses appear to be very efficient at absorbing, storing and using the iodine that is available in their feed. Iodized salt is also used by a lot of owners as a supplement but for some horses it is still insufficient for their needs. This may be because iodine absorption and use may be reliant on other factors apart from what iodized salt provides.

## How do we measure iodine levels?

Due to the difficulty of measuring iodine levels in the horse directly an indirect way of assessing iodine levels is to measure T3 and T4 levels. Should a horse develop goitre, its overall health status should be assessed as well as the diet that it is on. Some horses can develop goitre even though there is adequate iodine in the diet due to malabsorption or altered metabolic needs e.g. ageing horses and ponies, heavily pregnant mares on poor diets or other disease conditions like Cushing's Disease.

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