

Ragwort, a danger to horses

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The increase in ragwort infestation is a concern, not only because of its incredibly invasive nature but also it is dangerous to horses if consumed. Given the rise of ragwort around the region as witnessed by just driving around, this article, taken from a UK website, equinescienceupdate.co.uk, explains the growing threat to our horse population.

A multi-disciplinary research group at the University of Liverpool Veterinary School is developing a blood test to detect whether a horse is ingesting any ragwort. The test can therefore be regarded as an early indicator of ragwort poisoning long before any clinical signs develop.

Ragwort presents a growing threat to the UK horse population. Dr Derek Knottenbelt of the Liverpool University Veterinary School estimates that around 500 horses and ponies died of liver failure due to ragwort poisoning last year. With the increasingly widespread distribution of the plant, he suggests that this year the total number of equine deaths from ragwort poisoning may reach 1000. This is possibly an underestimate of the problem because the signs are not specific and many cases of ragwort poisoning are not diagnosed.

The toxic effects of ragwort are due to pyrrolizidine alkaloids (PA's), which are present in all parts of the plant, including the seeds. Although PA's also occur in other plants, common ragwort presents the greatest risk for horses because of its widespread distribution in poorly maintained pasture and in grassland used for hay production.

The PA's are rapidly absorbed from the gastro-intestinal tract. They pass to the liver where they are broken down to produce toxic compounds called pyrroles. These act on the DNA of hepatocytes (liver cells) and prevent cell division. Consequently, the hepatocytes are unable to divide and become large cells called megalocytes. When the megalocytes die they release toxins which may be taken up by neighbouring cells. The dead cells are replaced by fibrosis, which may itself cause further damage to other cells. Thus the damage to the liver is progressive.

The liver is able to maintain normal function until at least two-thirds of its tissue has been destroyed. So the ragwort toxins are able to wreak havoc in the liver without being detected. By the time the horse shows signs of liver failure the damage to the liver is so extensive that treatment is not possible.

Because the liver has many functions, the signs that are seen when it fails vary. The first indications may be weight loss, photosensitive dermatitis (inflammation affecting only the non-pigmented skin), lethargy or change in behaviour.

As the condition deteriorates, the behavioural abnormalities get worse, the horse starts to wander aimlessly and stagger about. It may stand with its head pressed against the wall, become blind and have difficulty breathing. The signs can develop so quickly that the cause of death may be wrongly attributed to something else like "heart attack", "stroke" or colic. In some cases the horse may be found dead without warning.

Currently there are no simple tests available to specifically detect ragwort poisoning. There are tests that can detect damage to the liver - in particular looking at liver enzymes in the blood. Liver function can be assessed by measuring bile acid. If liver function is impaired the levels of bile acids in the blood increases. Neither enzymes nor bile acids are specific for ragwort.

It can also be difficult to confirm that ragwort is the cause of the liver disease because the effects of the toxins are seen long after the plant has been ingested. There may be no sign of ragwort in the diet of the horse when signs are seen. A diagnosis of ragwort poisoning may have to rely on finding typical microscopic changes in the liver.

In the absence of an effective treatment for ragwort poisoning it is all the more important to prevent horses having access to the plant either at pasture or in contaminated hay. Preventing ingestion of ragwort is the only way to prevent ragwort poisoning.

Ragwort can be difficult to identify when it is dry in hay. Feed samples can be analysed for PA content. This is time consuming, relatively expensive, and the reliability of the result depends upon the accuracy of the sample.

Clinicians at the Liverpool Vet. School have been working with scientists from the University's Protein Function Group to develop a test to detect early signs of exposure to ragwort. A pilot study has shown that the test is effective at recognising changes in the blood due to small amounts of pyrrolizidine alkaloids. The test recognises alterations in certain components of the blood cells caused by the toxins. A positive result indicates current or recent access to the toxin in feed.

This simple screening test will make it easier to check whether the food being given is safe or not. Early detection of exposure to ragwort will allow suitable preventative measures to be taken.

The development of this test heralds the prospect of reversing the mounting death toll due to ragwort. However, the test is not currently available as more funds are required to validate it for general use. Before the test can be available to vets in practice, further work needs to be done to confirm its accuracy and reliability.
