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Frequently Asked Questions for Owners Atypical Myopathy Testing

What is atypical myopathy and what causes it?
Atypical myopathy is a serious and often fatal disease caused by eating the seeds, leaves and/or seedlings of the Sycamore tree which contain a toxin called Hypoglycin A (HGA). Horses show signs of colic and weakness which quickly develop to muscle tremors, a low head carriage, lying down sometimes with the inability to get up. The disease can develop very quickly over a matter of hours and early supportive therapy from a vet is likely essential. The toxin prevents the horse's body from utilising nutrients that would normally allow muscles to function properly, in particular the muscles that are used for breathing, standing and movement, but also the heart muscle. Affected horses often have dark, reddish urine because of the breakdown of muscle tissue, which ends up being excreted through the kidneys. Eventually breathing difficulties and heart problems result in death or the need for euthanasia in most affected animals.

Why should I test plant material on my grazing?
By finding out if the seeds, leaves or seedlings in your pasture contain the HGA toxin and how much, you can make an informed decision about the risks posed to your own horse and then respond appropriately.

What is HGA and why do trees contain it?
HGA is an unusual amino acid that is found in certain trees but not others. We do not know its function, although it might be important for growth or for tree defence to prevent animals grazing.

Do other trees contain HGA or is it just Sycamores?
Research suggests that in Europe it is predominantly the Sycamore tree that contains HGA. Current evidence suggests that other species of Acers, common to Europe, such as the Field Maple and Norwegian maple and other trees outside of the Acer family such as Ash and Oak do not contain the toxin. Some other species of Acer, such as the Box Elder, can also produce the toxin, as can Lychee and Ackee fruit trees.

How do I know if the trees on my pasture are Sycamores?
The Sycamore tree belongs to a family of trees called Acers. There are more than 25 different Acers
e.g. Field maple and Norwegian maple and not all of them contain HGA. The appearance of their seeds and leaves differ and can be used for identification but it can be difficult. Asking an expert's opinion might be helpful.

Do all trees contain the same amount of toxin?
No. The toxin levels can differ between trees and differ between the leaves, seeds and seedlings of a single tree.

Does the toxin remain at the same level all year and from year to year?
We have recently published our research into this (Equine Vet J. 2025 Nov;57(6):1656-1665. doi: 10.1111/evj.14475. Epub 2025 Jan 25). Our research has shown that the toxin level can vary in leaves and seeds within a single year and from year to year. Local environmental factors seem to play a role in influencing the toxin concentrations in sycamore plant material. However, other climatic factors or other variables may also play a role. Some years appear to be more dangerous than others.

How much toxin do horses need to eat to cause atypical myopathy?
It is very difficult to be precise about the exact amount of toxin a horse would need to ingest to be affected, as there are multiple factors involved. Horses seem to differ in their response to the toxin which might be due to genetic factors, diet, prior exposure or other variables. Some recent research suggests that the gut flora (bacteria etc) can play a role too (Animals (Basel). 2025 Nov 19;15(22):3343. doi: 10.3390/ani15223343). The time frame might also be important. These are all active areas of research and we will report results as soon as they are available.

Are other animals affected by the toxin?

Current research and clinical experience suggest that horses and donkeys seem especially sensitive to the effects of the toxin. We do not know the extent to which other animals (such as grazing sheep or cattle) might also be affected, although we believe it is likely to be much lower. We would be interested in hearing from people who believe they have evidence of other species of animals being affected by atypical myopathy.

Are there certain ages/breeds/sexes of horses that are more susceptible to atypical myopathy?
No. Horses and ponies of any age, breed, sex and height can develop atypical myopathy.

I have had horses on my field for many years without a problem. Does that mean that it is safe, even though I have Sycamore trees?
No. For some reason that we don't yet understand, some horses seem not to be affected by the toxin, even though they are potentially exposed. Of course, some horses might be very careful in what they eat, and they manage to avoid ingesting seeds and seedlings; however, there is some evidence to suggest that some horses ingest the toxin, but do not develop the life-threatening disease. Currently there is no way of knowing which these horses are. Just because horses have been grazing in the field for many years, does not mean that it is safe, either for these horses or for newly introduced horses.

How should I test my grazing? How do I collect and send you samples?
Collect seeds or leaves or seedlings from either the ground or the tree. Put your plant material in a sealable plastic sandwich bag. Send this in an envelope along with the owner's plant submission form to the laboratory using the address label available on the website. We advise samples arrive at the laboratory the next day to ensure accurate toxin levels. We no longer offer testing of mixed plant material (i.e. bags containing a mixture of seeds and leaves). If there is more than one type of plant material in a sample bag, we will test whichever material forms the largest part of the sample. If you wish to test more than one type of plant material, each type will be charged as one test and will need to be sent in separate sample bags.

Obtain samples directly from the tree if you wish to find out the toxicity of a particular tree. In this case collect leaves and/or seeds from at least 3 different branches. If you wish to test seeds and leaves from a tree, they will need to be tested individually (and sent into us in separate bags) and will therefore incur two test costs.

Collect samples from the ground if you wish to find out the toxin level and risk to your grazing horses. Collect your sample (either seeds/leaves/seedlings) from the affected area of grazing if it is localised in one area. If your whole paddock is affected divide it into 4 and collect some material from each of the 4 areas. Combine all the material into one sandwich bag and send to the lab.

What samples should I collect in Spring and in Autumn?
In spring, seedlings are most likely to be present along with some seeds so it would be sensible to test either seedlings or seeds that are on the ground. In Autumn, leaves and seeds are most likely to have fallen on the pasture so it would be sensible to test either of these singularly. As we no longer offer mixed plant material testing, collect whichever material is most abundant on the pasture or if both leaves and seeds are equally abundant, it would be sensible to test seeds as there is a trend for them to contain higher amounts of toxin. At all times of year if you wish to test an individual tree you should collect leaves or /and seeds directly from the tree of interest. If you wish to test both seeds and leaves they need to be sent in separate bags and will be tested individually therefore incurring two test costs.

How much should I collect?
The amount we require for each type of sample is different and may depend on the amount of material available on your pasture but we recommend the following:

A double handful of seeds
A single handful of seedlings 10 leaves

Please note that samples containing a mixture of plant material in a single bag (e.g mostly seeds with some leaves) will be analysed using only the material that makes up the highest proportion of the sample (in this example only the seeds would be tested). If you send more than 1 bag, we will assume you want the contents of each bag handled separately, so if you take samples from 4 quarters of your field remember to combine them into 1 bag at the end.

How much does testing cost?
We subsidise the cost of testing during peak times when Sycamore material is more likely to be present on the pasture and when the highest numbers of atypical myopathy cases are usually seen. During these dates the cost of the test is £192 per sample. Outside of these peak times the test is no longer cost-subsidised by us and each sample is charged at £288. We publish peak times on our website each year and therefore the amount you are charged per sample will depend on the date we receive the sample.

What do you mean by one sample?
One sample is one bag of seeds or leaves or seedlings. If you want to test more than one paddock, more than one area of a paddock or more than one tree, the cost will increase as a result according to the number of samples. Please make sure you send in the correct amount for the number of samples you collect and send.

How can I pay?
We will issue you an invoice which you can pay by credit/debit card by calling the telephone number on the invoice, or by bank transfer using the details at the end of the invoice. It can take 1-2 weeks for the finance team to add your details to the system in order to invoice you.

How long do results take and how will I receive them?
Results take approximately 10 days as we run the samples in a single batch on a weekly basis to make the cost more affordable to owners. Results are sent via email. Please check your junk email box if you think you haven't received your results.

Why have you changed the pricing and do you still offer a faster turnaround?
We have changed the way we offer testing for plant samples to offer a quicker turnaround time for results during the seasons when atypical myopathy is usually more prevalent and when Sycamore material is more abundant. We subsidise the cost of each test during this peak time. Outside of these times we do not receive sufficient numbers of samples to run an entire batch leading to an increase in running costs of the machines used to perform the analysis. We have discontinued the expedited or faster turnaround service as we now run samples on a weekly basis.

Do I need to send my sample chilled or with wet tissue?
No. Please send samples to arrive at the lab the next day and at room temperature. It is preferable to collect the samples after dry weather so that they are dry, if possible.

Can I discuss my results or hypoglycin A testing with you by phone?
Unfortunately, due to staffing limitations, the Comparative Neuromuscular Diseases Laboratory is unable to discuss individual results or atypical myopathy testing in general by telephone or email. We do provide generic advice on each result sheet about how to interpret your test result and give advice and information about atypical myopathy on our owner information sheet as well as here in this frequently asked questions (FAQ) document. Please take some time to look through the rest of these FAQ. We recommend that you contact your own vet if you have specific further queries.

If my sample isn't analysed as soon as you receive it, won't it degrade?
No. As soon as we receive your sample it is logged and frozen so that when tested it is in the same condition as when we receive it.

How accurate is the test?
The test we use exceeds industry standards and is highly sophisticated and extremely accurate, reliable and reproducible.

Can I send samples from outside the UK?
Yes, as long as there are no outbreaks of Anoplophora glabripennis (Asian longhorned beetle). Please follow the instructions for collection as usual and send to the lab using a next day delivery service. For customs' paperwork please write the description as Sycamore (Acer sp.) seeds/leaves/seedlings and include the country from which you have collected the samples. We recommend using FedEx as their customs team will contact us if they require any further documentation at the port of entry into the UK.

Can I cancel the test once I have sent in samples?
Unfortunately not, as we run the test weekly but not always on the same day we can't guarantee exactly when your sample will enter the processing phase.

Can I add additional plant material to my original sample once I've sent it?
If your original sample hasn't entered the processing phase it is possible to add material to the sample however we can't guarantee this.

How do I check you have received my sample?
The laboratory is extremely busy so it isn't possible to let every owner know that we have received their sample. Please assume your sample has been received. If you haven't received results after 10 days of the sample arriving at the laboratory, please check your junk email. If you still cannot find results please email neuromuscular@rvc.ac.uk . Please note this email address can only be used to check for missing results. We regret other enquiries cannot be answered.

What information will I get from this test?
You will receive an actual value for the amount of toxin contained in your sample. There will also be information on how to interpret your result and advice on what to do next.

How do I interpret the result?
Use your result to work out where the value falls in one of the 5 categories listed on the second page of the report. Once you have worked out which category it falls into, follow the advice listed under each category (at the end of the report). If you have additional questions, please contact your own vet for advice. Unfortunately, the neuromuscular laboratory does not have the staff to be able to handle additional questions. We are actively researching many pertinent questions for this disease and we will release those results as soon as we have these important answers.

How do I remove the toxic plant material from my grazing?
If you have fallen leaves and seeds you can either rake these up and dispose of them or use a paddock vacuum cleaner. Seedlings can be mowed or sprayed using weed killer. Your vet can recommend a safe weed killer for use with grazing paddocks. We recommend you collect any sprayed or mowed seedlings as they may remain toxic or wait for them to entirely disappear. If you are thinking of removing the Sycamore tree(s) from your pasture speak to the forestry commission or local council to ensure there is no preservation order.

If I can't remove all of the material, how do I reduce the risk to my grazing horses?
Fence off affected areas, provide good quality hay in the field and limit the amount of time horses spend on the pasture, particularly at night, when horses might not see the toxic material when grazing.

Do sprayed/mowed seedlings remain toxic?

Following further research conducted by our laboratory (Equine Vet J. 2019 Sep;51(5):701-704. doi: 10.1111/evj.13070. Epub 2019 Jan 30) mowed or sprayed seedlings remain toxic and therefore we recommend to collect them after spraying/mowing or waiting for them to disappear entirely.

How do I know if my horse has eaten the plant material containing the toxin?
We also offer a blood test to assess the level of the toxin and its metabolite in horses. You need to contact your vet to have this done.

I'm worried about my horses grazing pasture where Sycamores are present. What should I do?
If your horses are off colour, weak or sluggish, contact your vet immediately even out of normal working hours (as an emergency). Early intervention in atypical myopathy and removing horses from the source of the toxin is essential. If your horses are acting normally, talk to your vet during open hours to discuss your concerns or submit samples to us for testing. Your vet might want to run a blood test to see if there is "sub-clinical" or low level of toxin exposure.

My horses have grazed the same land for years without problems, is there really a risk?
Yes there is. There have been reports of atypical myopathy occurring in horses that have been on the same pasture for years. There is no clear rule as to why some horses are affected or not affected.

Will seedlings always test high?
No. Seedlings from trees other than Sycamores are unlikely to contain the toxin, HGA. However there is a trend for seedlings to have higher amounts of toxin than seeds or leaves from Sycamore trees. At present, we do not know the reason that some seedlings contain higher amounts of toxin than others – this is something we are actively researching.

If a tree tested negative in a previous year, do I need to test it again this year?
If the tree tested negative in a previous year, it is most likely not a Sycamore tree and does not need testing again. If you are sure the tree is a Sycamore, then retest or contact the lab for advice.

Will you update owners with more information as you discover it in your research?
Yes. We will publish the results of our continuing research so that owners can understand more about atypical myopathy and how to reduce the risk.