

Alpha-gal allergy

Alpha-gal allergy is an unusual type of food allergy that can start with a tick bite. It involves an allergic reaction to a carbohydrate (a type of sugar) known as alpha-gal which is found in the muscles of mammals. Allergy to alpha-gal is rare in the UK but reactions can sometimes be serious, so speak to your GP if you think you might have alpha-gal allergy.

What is alpha-gal allergy?

'Alpha-gal' is short for galactose-alpha-1,3-galactose. It's a type of carbohydrate found in the muscles of mammals. Alpha-gal allergy starts when you are bitten by a tick which carries the alpha-gal molecule in its saliva.

When alpha-gal gets into your bloodstream, the immune system responds and makes antibodies that mark the alpha-gal molecule as 'foreign'. The next time you eat meat from mammals such as lamb, beef or pork (but not poultry such as chicken or turkey), the body's immune system wrongly identifies the alpha-gal in the meat as a threat. When this happens, the body releases chemicals, such as histamine, in response. It is the release of these chemicals that causes symptoms.

Which species of tick carry alpha-gal?

Not all species of ticks can cause alpha-gal allergy. Most known cases have been linked to the Lone Star tick which is found in southern and eastern areas of the United States. Cases of alpha-gal allergy have also been reported in many other countries including the UK, Australia, Sweden, Italy, Germany, Japan and South Africa, and involve different species of ticks.

What are the symptoms of alpha-gal allergy?

The symptoms of alpha-gal allergy are usually delayed, appearing three to eight hours after eating. This is unlike most other food allergies where symptoms usually come on within minutes. Most other food allergies are caused by proteins but alpha-gal is a carbohydrate, which might be why there is a delay in the allergic response.

Mild to moderate symptoms may include:

- a red raised rash (known as hives or urticaria) anywhere on the body
- a tingling or itchy feeling in the mouth
- swelling of the lips, face or eyes
- stomach pain or vomiting.

More serious symptoms

More serious symptoms are uncommon but possible. These may include:

- AIRWAY - swelling in the throat, tongue or upper airways (tightening of the throat, hoarse voice, difficulty swallowing).
- BREATHING - sudden onset wheezing, breathing difficulty, noisy breathing.
- CIRCULATION - dizziness, feeling faint, sudden sleepiness, tiredness, confusion, pale clammy skin, loss of consciousness.

The term for this more serious reaction is **anaphylaxis** (pronounced anna-fill-axis).

Most healthcare professionals consider an allergic reaction to be anaphylaxis when it involves difficulty breathing or affects the heart rhythm or blood pressure. Any one or more of the ABC symptoms above may be present.

In extreme cases there could be a dramatic fall in blood pressure. The person may become weak and floppy and may have a sense of something terrible happening. Any of the ABC symptoms may lead to collapse and loss of consciousness and, on rare occasions, can be fatal.

[Read more about anaphylaxis.](#)

Getting a diagnosis

If you think you may be allergic to alpha-gal, see your GP who can refer you to a specialist allergy clinic if needed. They can find a clinic in your area from the [British Society for Allergy and Clinical Immunology \(BSACI\)](#).

It's important to get a referral even if the symptoms were mild because it can be hard to tell if future allergic reactions could be more serious.

Once you get a referral, the consultant will discuss your medical history and symptoms with you. They might suggest skin prick, blood tests, and food challenge tests to help diagnose the allergy and work out how serious it may be.

[Read more about allergy testing.](#)

What can mean you're at higher risk?

Some clues that you might be at higher risk of more serious reactions are:

- you have already had a serious reaction, with any of the 'ABC' symptoms
- you have asthma, especially if it is not well controlled
- you have recently been bitten by a tick
- you spend lots of time outdoors in wooded areas
- you have reacted to a tiny amount of red meat.

If you have asthma, and it is not well controlled, this could make an allergic reaction worse. Make sure you discuss this with your GP or allergy specialist and take any prescribed medicines.

Treating symptoms

If you have mild allergic symptoms, you may be prescribed antihistamine medicine to take by mouth. If you are at higher risk of anaphylaxis, you may be prescribed adrenaline to use in an emergency.

Adrenaline comes in pre-loaded adrenaline auto-injectors (AAIs) that are designed to be easy to use. Make sure you know how and when to use them. Ask your healthcare professional to show you how to use your specific brand of AAI. You can also find help and training videos on the manufacturer's website where you can get a free trainer AAI to practise with.

The adrenaline auto-injectors prescribed in the UK are:

- Emerade
- EpiPen
- Jext

You must have two AAls with you at all times, as you may need to use a second one if your symptoms don't improve after five minutes or get worse.

[Read more about what to do in an emergency.](#)

Avoiding tick bites

If you spend lots of time outside in wooded areas:

- make sure you wear long sleeved tops and long trousers
- use insect repellents to avoid being bitten
- check your skin for any ticks when you get home
- you can get special 'anti-tick' clothing that may offer further protection from bites.

If you have been bitten by a tick, remove it carefully using fine-tipped tweezers. Pull the tick directly upwards – avoid twisting or jerking so the mouth parts don't break off in the skin. Once you have removed it fully, clean the area thoroughly with soap and water.

Avoiding alpha-gal in foods and medicines

Once you have been diagnosed with alpha-gal allergy, you will need advice from an allergy specialist about what you will need to avoid. Alpha-gal can be found in meat, gelatine, dairy products, and some medicines, but not everyone with alpha-gal allergy reacts to every food or product that contains it.

Which foods will I have to avoid?

If you have alpha-gal allergy you will need to avoid all meat from mammals. This includes:

- All meat from mammals including beef, pork, lamb and venison.
- All offal from mammals including kidney, liver, heart and intestines.

Which foods might I need to avoid?

Some people may also react to gelatine and dairy products and will need to avoid products that contain them, such as:

- sausage casings made from pork gut
- gelatine, which is often found in jelly, marshmallows, jelly babies and other sweets
- collagen supplements
- lard or beef dripping
- dairy products including milk, cheese, yoghurt and butter.

Some people with alpha-gal allergy report reacting to Carrageenan, which is a type of seaweed used as a thickener in many dairy and vegan foods. Carrageenan is the only plant food that contains alpha-gal.

Which medicines might I need to avoid?

Rarely, people with alpha-gal allergy react to medicines that contain ingredients made from animal products. This is not a complete list, and you may not need to avoid all of these:

- Cetuximab, an anti-cancer treatment
- Gelatin-based colloid plasma substitute (Gelafundin)
- Gelatin-containing vaccines (Zostavax, MMR, yellow fever)
- Bovine + porcine valves
- Pancreatic enzyme replacement
- Crotalidae polyvalent immune Fab (CroFab)

Some common ingredients in medicines that can sometimes be derived from animal products include:

- Glycerol
- Glycerin
- Magnesium stearate

If you know you react to medicines that contain ingredients made from animal products, you will need to check ingredients carefully when you buy or are prescribed medicines or ask your GP or pharmacist to check for you.

Checking labels and eating out

Read the ingredient lists on food packets carefully every time you shop. Meat from mammals is NOT included in the list of top 14 major food allergens in the UK. This means meat will normally be listed as an ingredient on the label but won't be emphasised, in bold for example.

If you have been advised to avoid dairy products, these ARE included in the list of top 14 major food allergens in the UK. This means they must be emphasised on ingredients labels.

Read the ingredient list every time you buy a product as manufacturers change their recipes often.

When eating out

Restaurants, cafes, hotels, takeaways and other catering businesses are NOT required by law to provide information about ingredients that are not included in the top 14 major food allergens. This means you will need to ask staff directly if the food you'd like to buy contains meat or meat products and if there is a risk of cross-contamination. For example, if meat dishes are cooked near vegetarian dishes, the vegetarian dishes could become contaminated.

Catering businesses are required by law to provide information on major allergens in the food they serve, including dairy products.



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Let them know that even small quantities can cause an allergic reaction and don't be afraid to ask staff to check with the chef.

[Read about shopping and preparing food.](#)

The link with wasp venom allergy

Alpha-gal is not detectable in wasp stings, but you will have a higher risk of wasp venom allergy if you have alpha-gal allergy.

[Read more about insect sting allergy](#)

Living with alpha-gal allergy

Adjusting to life with alpha-gal allergy can take time. It can have a big impact on your lifestyle if you enjoy eating meat and now need to avoid it. If you are advised to avoid dairy and medicines made with animal products too, this will have an even bigger effect.

[Read more about managing allergy and anxiety](#)

Key messages

- If you think you have an alpha-gal allergy, visit your GP.
- Always speak to your allergy specialist for advice on which products you need to avoid.
- If you are prescribed adrenaline auto-injectors, carry two with you at all times.
- Know how to use your adrenaline auto-injectors and what to do in an emergency.
- Read food labels carefully and question staff in restaurants, takeaways and anywhere you eat out of home.
- If you have been advised to avoid medicines containing animal-derived ingredients, check ingredients carefully or ask your GP or pharmacist to do this for you.
- If you have asthma, make sure it's well-managed.



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Feedback

Please help us to improve our information resources by sending us your feedback at: -

<https://www.anaphylaxis.org.uk/information-resources-feedback/>

Sources

All the information we produce is evidence based or follows expert opinion and is checked by our clinical and research reviewers. If you wish to know the sources we used in producing any of our information products, please contact info@anaphylaxis.org.uk and we will gladly supply details.

Reviewer

The content of this factsheet has been peer-reviewed by Professor John Warner, Emeritus Professor, National Heart and Lung Institute, Imperial College, London and Hon. Professor Paediatrics University of Cape Town.

Disclosures

We are not aware of any conflicts of interest in relation to the review of this factsheet.

Disclaimer

The information provided in this factsheet is given in good faith. Every effort is taken to ensure accuracy. All patients are different, and specific cases need specific advice. There is no substitute for good medical advice provided by a medical professional.

About Anaphylaxis UK

Anaphylaxis UK is the only UK-wide charity solely focused on supporting people at risk of serious, life-threatening allergic reactions. We provide information and support to people living with allergies through our free national helpline. We also fundraise to achieve our ultimate aim, to create a safer environment for all people at risk of serious allergies. Visit our website www.anaphylaxis.org.uk and follow us to keep up-to-date with our latest news. We're on Facebook @anaphylaxisUK, LinkedIn, Instagram @anaphylaxisUK, Twitter @AnaphylaxisUK and YouTube.