



Wheat Allergy – the Facts

Wheat allergy occurs when the body's immune system reacts to one or more of the proteins found in wheat. It occurs in children as well as adults but is usually outgrown in infancy (Keet et al 2009). If you or your child are experiencing allergic symptoms and suspect wheat is triggering them, it is important to visit your GP, who can organise a referral to an allergy specialist.

This factsheet aims to answer some of the questions which you and your family might have about living with wheat allergy. Our aim is to provide information that will help you to avoid products containing wheat, minimise risks and know how to treat an allergic reaction should it occur.

Throughout the text you will see brief medical references given in brackets. More complete references are published towards the end of this fact sheet.

What is wheat allergy?

Food allergy occurs when the body's immune system reacts to a harmless food component, usually a protein, because it mistakenly registers that substance as a threat. In people with wheat allergy, the immune system has produced substances called immunoglobulin E antibodies (IgE) which are specifically activated when they encounter wheat. When wheat is eaten, touched or inhaled, these IgE antibodies against wheat connect with wheat proteins and trigger the release of certain substances in the body, which provoke an allergic response. In most cases the symptoms are immediate – beginning within seconds or minutes.

Most people who experience adverse reactions to wheat are not allergic to it – they are either intolerant to wheat or have coeliac disease. These are separate conditions to wheat allergy.

Wheat intolerance is not triggered by the immune system and therefore cannot be diagnosed with the use of standard allergy tests such as blood or skin tests. Common symptoms include digestive discomfort, diarrhoea and bloating.

Coeliac disease is a lifelong autoimmune condition triggered in sensitive people when they eat gluten. Gluten is a cereal protein found in wheat, rye, and barley. People who react to gluten develop damage to the lining of the small bowel. This damage decreases the ability of the gut lining to absorb nutrients, which can result in pain, gastro-intestinal symptoms and in the long term nutritional deficiencies.

Remember – whatever your symptoms to wheat, you should go and see your GP, who can undertake standard blood tests to help decide whether you need further assessment by an allergy or gastro-intestinal specialist.

The rest of this fact sheet is confined to actual wheat allergy, that is, symptoms triggered by the immune system to proteins in the wheat. Gluten is just one of the proteins in wheat. If you are allergic to wheat, you may be reacting to gluten or you may be reacting to one of the other proteins.

Symptoms of wheat allergy

Food allergy symptoms, including those triggered by wheat, usually occur quite soon after the food is eaten, most often within one to two hours of consumption. Sometimes the symptoms begin within seconds or minutes. Non-serious symptoms include nettle rash (otherwise known as hives or urticaria) anywhere on the body, or a tingling or itchy feeling in the mouth. There may be facial swelling, which is not serious in itself unless any of the more severe symptoms listed below are also present.

More severe symptoms may include:

- Swelling in the throat
- Difficulty breathing
- Severe asthma
- Severe abdominal pain, nausea and vomiting

In a few cases there is a dramatic fall in blood pressure (anaphylactic shock). This is where the person may become weak and floppy and may have a sense of something terrible happening. This may lead to collapse and unconsciousness.

Getting a diagnosis of wheat allergy

Your GP should always be the first point of call to try and get to the root of the reason why you are having symptoms. If they feel you need a specialist opinion, they can locate an allergy clinic in your area by visiting the website of the British Society for Allergy and Clinical Immunology (www.bsaci.org).

If you are referred to an allergy specialist, they will discuss your symptoms with you in detail as well as your medical history. You might also undergo skin prick tests and blood tests in the clinic, which will help form an overall picture. These tests can give some helpful indicators as to whether you have a wheat allergy but they need careful interpretation taking into account the history of any reactions you have had. Many people with an allergy to grass pollen will have a positive skin-prick test to wheat, even if they have no symptoms to wheat. This is due to common allergenic features in wheat and grass pollen.

If wheat allergy is diagnosed, your specialist cannot say how severe your next reaction is going to be. The next reaction might be just the same, it might be mild, or it could be a lot more severe. Also, severity cannot be gauged from the size of the skin prick reaction or from level of a positive blood test. However, the severity of any past reaction and the amount of wheat that caused it are important factors. If you had a previous severe

reaction, future symptoms are also likely to be severe. And if you have reacted to a very small amount of a food containing wheat, this also suggests your allergy is probably severe.

Also, the presence of asthma – especially when poorly-controlled – is known to be a major risk factor for the occurrence of more severe allergic reactions.

Treating symptoms

If wheat allergy is strongly suspected, and especially when allergy tests have confirmed it, you will be advised about what medication to take if you experience a reaction. This might be an antihistamine or it might also include adrenaline (also known as epinephrine). This will depend on your own individual history and symptoms to wheat. The adrenaline injectors prescribed in the UK are EpiPen, Jext and Emerade. In our view, these injectors are easy to use and designed for self-administration. If you are prescribed an injector, it should be available at all times – with no exceptions. An ambulance must be called after use as symptoms may return after a short period and more than one injection of adrenaline may be required to control the reaction.

If you are prescribed an adrenaline injector, you will need to know how and when to use it. Ask your GP or allergist for advice. You can also find help on the website relevant to the injector you carry.

- Emerade: www.emerade.com
- EpiPen: www.epipen.co.uk
- Jext: www.jext.co.uk

Outgrowing wheat allergy

Wheat allergy is most common in children, but the majority of children (96 per cent) will grow out of a wheat allergy by the time they reach 16 years of age (Kotaniemi-Syrjanen et al). Wheat allergy in adults is rare and usually associated with exercise (see below for more details).

Wheat and exercise

For some people, an allergic reaction to wheat can only occur in conjunction with exercise. If they eat wheat without exercise, symptoms do not occur. (Romano et al 2001, Matsuo et al 2005).

Exercise-induced allergy is a complex condition that needs the expert diagnosis of a specialist at an allergy clinic. The specialist will be able to consider which cases require an adrenaline injector to be prescribed.

Avoiding wheat

If you are allergic to wheat, all foods that contain wheat must be avoided. Many people also have to avoid barley and rye as these contain similar proteins; you should check with your doctor. It is vital to read food labels carefully every time you shop as food producers sometimes change the ingredients they use. It is helpful that all pre-packaged food sold within the EU, including the UK, must declare and highlight the presence in the ingredient list, of major allergens including wheat, even if they appear in small quantities.

The food allergen labelling laws that cover pre-packed food now also apply to the catering sector. When eating out or buying takeaway food, food businesses will be required to provide information on allergenic ingredients. This information can be provided in writing and/or orally. If information is provided orally, the food business will need to ensure that there is some sort of written signage that is clearly visible, to indicate that allergen information is available from a member of staff. Systems should also be in place to ensure that, if requested, the information given orally is supported in a recorded form (in writing for example) to ensure consistency and accuracy.

In some other European countries, food businesses are required to provide the information only in writing

You should also question staff very directly, asking whether wheat is an ingredient of the food you have chosen or whether there is a risk of cross-contamination. Don't be afraid to ask the waiter to check with the chef.

Ingredients which might contain wheat include:

- **Processed foods** including gravy, salad dressings, sauces, soups and burgers. There are many other examples.
- **All types of bread** including rolls, malt bread, chapatti, pitta, naan, paratha, croissants, soda bread and fancy breads. Wheat-free bread is available in many supermarkets but check that it is labelled free from wheat and not simply 'gluten free'. There are other proteins in wheat apart from gluten that may be causing your allergy.
- **Wheat-based breakfast cereals.** Terms to look for include anything with wheat in the name, as well as bran.
- **Pasta and other wheat products**– avoid any pasta made with wheat or semolina. Pasta is found in some soups such as minestrone. Other wheat-based foods to avoid include couscous, rusks, pizza, spelt and semolina.
- **Desserts and sweet things** – anything containing wheat or wheat flour is a problem food including cakes, crackers, pastries, ice cream wafers and cones, biscuits, doughnuts, batter and Yorkshire pudding.
- **Hydrolysed vegetable protein (HVP)** can be derived from wheat and is used to give a savoury flavour to products such as sauces, soups and gravies.
-

- **Modified starch** – avoid modified wheat starch and raising agents such as baking powder unless it is wheat-free.
- **Beers** can also contain wheat as well as barley, and they will certainly contain gluten.

The above list covers the major wheat-containing foods, but there may be others.

Home baking will give you full control of what you are eating and you can recreate standard recipes with wheat-free alternatives. If you or your child has several food allergies, it is possible to produce celebration cakes without wheat, egg or milk and there are recipe books on the market that can help with this.

'Gluten-free' foods

Under EU law, products labelled 'gluten-free' must contain no more than 20 parts per million of gluten. This sounds like a tiny amount and such products may prove tempting for people with wheat allergy. However, the description 'gluten-free' is based on the principle that this level will be safe for people with coeliac disease. Some people with wheat allergy react to amounts less than 20 parts per million if a reasonable portion is eaten. There is not enough research to determine what level of what is safe for people with wheat allergy, so we advise all those affected to avoid 'gluten-free' foods. As stated above, there is also a possibility that you are reacting to other proteins in wheat other than gluten.

Wheat isolates and deamidation

An ingredient known as wheat protein isolate or deamidated wheat is used in the food industry. It is commonly added to pasta and pizza dough but also used to increase the protein content of nutrition bars, granola bars, cereal coatings, baked goods and meat substitutes (Leduc et al 2003, Denery-Papani et al 2012). Very rarely, some people can develop an allergy to the wheat protein isolate but not to wheat. If you suffer unexplained reactions to a food such as pizza or pasta, but can eat bread and other wheat products, you may have this type of allergy. A specialist allergy diagnosis is needed to determine whether you are one of the small number of people with this problem.

Wheat allergy: some of the key messages

If you suffer symptoms caused by eating wheat, see your GP, who should refer you to a specialist. A visit to a specialist will help you identify whether you have an actual allergy to wheat, or have an intolerance.

A diagnosis of a food allergy can be daunting but by thinking ahead and employing coping strategies, people affected can get on with their lives.

- Always be vigilant when food is around
- Check food labels
- Be proactive when eating out

- Carry prescribed medication everywhere
- Learn how and when to use your adrenaline auto-injector
- Ensure that asthma is well managed.

References

- Keet, C.A., Matsui, E.C., Dhillon, G., Lenehan, P., Paterakis, M., Wood, R.A., 2009. The natural history of wheat allergy. *Annals of Allergy, Asthma & Immunology*. May, 102(5):410-5.
- Kotaniemi-Syrjänen, A., Palosuo, K., Jartti, T., Kuitunen, M., Pelkonen, A.S., Mäkelä, M.J., 2010. The prognosis of wheat hypersensitivity in children. *Pediatric Allergy and Immunology*, 21:e421-426
- Romano, A., Di Fonso, M., Giuffreda, F., Papa, G., Artesani, M.C., Viola, M., Venuti, A.,
- Palmieri, V., Zeppilli, P., 2001. Food-dependant, exercise-induced anaphylaxis: clinical and laboratory findings in 54 subjects. *International Archives of Allergy and Immunology*, 125:264-272
- Matsuo, H., Morimoto, K., Akaki, T., Kaneko, S., Kusatake, K., Kuroda, T., Niihara, H., Hide, M., Morita, E., 2005. Exercise and aspirin increase levels of circulating gliadin peptides in patients with wheat-dependent exercise-induced anaphylaxis. *Clinical & Experimental Allergy*, Apr., 35(4):461-6
- Leduc, V., Moneret-Vautrin, D.A., Guerin, L., Morisset, M., Kanny, G., 2003. Anaphylaxis to wheat isolates: immunochemical study of a case proved by means of double-blind, placebo-controlled food challenge. *Journal of Allergy and Clinical Immunology*. Apr.; 111(4):897-9.
- Denery-Papini, S., Bodinier, M., Larré, C., Brossard, C., Pineau, F., Triballeau, S., Pietri, M., Battais, F., Mothes, T., Paty, E., Moneret-Vautrin, D.A., 2012. Allergy to deamidated gluten in patients tolerant to wheat: specific epitopes linked to deamidation. *Allergy*. Aug; 67(8):1023-32

The content of this Fact Sheet has been Peer Reviewed by **Dr. Isabel Skypala**, Director of Rehabilitation and Therapies, Royal Brompton and Harefield NHS Foundation Trust; and **Dr. Andy Clark**, Consultant in Paediatric Allergy, Addenbrookes NHS Foundation Trust

Disclosures

Dr. Clark & Dr. Skypala have confirmed that they have no relevant conflicts of interest to declare in respect of this factsheet. Both are members of the Anaphylaxis Campaign's Clinical and Scientific Panel.

Disclaimer – The information provided in this leaflet is given in good faith. Every effort has been 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 the Anaphylaxis Campaign – “supporting people with severe allergies”

The Anaphylaxis Campaign is the only UK charity to exclusively meet the needs of the growing numbers of people at risk from severe allergic reactions (anaphylaxis) by providing information and support relating to foods and other triggers such as latex, drugs and insect stings. Our focus is on medical facts, food labelling, risk reduction and allergen management. The Campaign offers tailored services for individual, clinical professional and corporate members.

Visit our website www.anaphylaxis.org.uk and follow us on Twitter [@Anaphylaxiscoms](https://twitter.com/Anaphylaxiscoms).