Your quick guide to:
Reactions to Alcohol

It is not unusual to experience unpleasant and allergy-like symptoms after drinking alcohol. Reactions to alcoholic drinks, particularly wine, are common and may include a runny or itchy nose, skin flushing, wheeze, headache, and diarrhoea. Airway symptoms occur more often in people with pre-existing rhinitis and asthma.

Most reactions to alcoholic drinks are not due to allergy. While allergy always involves immune system reactions, reactions to alcohol are usually due to alcohol intolerance or non-allergic reactions to added or naturally occurring food chemicals in drinks, such as histamine or sulphites (referred to as non-allergic hypersensitivity), without involvement of the immune system.

When a true allergy to an alcoholic drink does occur, it is usually due to an allergy to an ingredient (for example grape in wine, wheat in beer, or egg in some cocktails), rather than to the alcohol itself. Alcohol itself is rarely a direct allergen but can act as a co-factor in allergic reactions, making symptoms more likely or more severe in some individuals.

Common causes for reactions to alcohol

Alcohol intolerance due to enzyme deficiency (alcohol flush reaction)

Some people experience facial flushing and symptoms such as nausea, vomiting, a fast heart rate, and headache after drinking alcohol. This is often called an alcohol flush reaction and is an intolerance to alcohol caused by an inherited (genetic) enzyme deficiency. The genetic variation leads to reduced activity of an enzyme called aldehyde dehydrogenase (ALDH), which is needed to break down alcohol. As a result, a toxic by-product of alcohol metabolism called acetaldehyde builds up in the body and causes symptoms. This condition is particularly common among people of East Asian descent.

The most effective way to prevent symptoms is to avoid or limit alcohol intake. Some supplements are marketed as helping the body break down acetaldehyde, but there is no good scientific evidence that they are effective or safe, and they are not recommended as a method to prevent reactions.

Non-allergic hypersensitivity to vasoactive amines, including histamine

Vasoactive amines (also known as biogenic amines) are chemicals that occur naturally in foods and include histamine, tyramine and phenylethylamine. They are present in many alcoholic drinks and can cause headache, flushing, itchy/runny nose and gut symptoms in people who are sensitive to them. Fermentation of foods and drinks increases levels of vasoactive amines, therefore fermented drinks such as wine, beer, cider and champagne may have higher levels compared to many other alcoholic drinks.

When people react to normal levels of vasoactive amines in food and drinks, this is called a non-allergic food hypersensitivity. Informally, it is often called histamine intolerance. It is thought to occur when histamine levels in the body are higher than the body's ability to break them down, for example due to reduced activity of the enzyme diamine oxidase (DAO). Alcohol itself can reduce DAO activity. Therefore, alcoholic drinks that are not high in vasoactive amines may still cause symptoms typical of this hypersensitivity in some people.

For further information about sensitivity to vasoactive amines such as histamine, please see the Allergy UK factsheet on histamine intolerance . If you feel that you may have this hypersensitivity, it is important to get advice from a healthcare professional such as a dietitian to help guide any dietary changes and prevent over-restricting your diet.

Non-allergic hypersensitivity to sulphites

In food labelling, 'sulphites' is a collective term used for a group of closely related sulphur dioxide-based compounds, including sulphur dioxide, bisulphites and metabisulphites.

Key facts:

Most reactions to alcoholic drinks are **not due to allergy.**

When a true allergy to an alcoholic drink does occur, it is **usually due to an** allergy to an **ingredient.**

Red wines generally **contain lower sulphite levels** than white or rosé wines.

Sparkling wines and **Champagne** often **contain** relatively **high sulphite levels.**

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Sulphites occur naturally in fermented drinks such as beer, cider and wine. They are also commonly added to wine, cider and certain other foods and drinks for their antioxidant and preservative effects.

Reactions to sulphites are usually due to non-allergic food hypersensitivity. True allergy is extremely rare. The reasons why some people have sulphite sensitivity are not fully understood. It is more common in people with asthma, and around 1 in 10 people with asthma may experience wheeze or other respiratory symptoms after consuming foods or drinks containing sulphur dioxide or sulphites. For more information, see Allergy UK's factsheet on sulphites and airway symptoms.

To help protect people from significant food reactions, even when not strictly due to allergy, sulphites are included in the 14 regulated allergens in the UK and EU. This means that:

- Prepacked foods and drinks containing more than 10 mg/kg or 10 mg/L must clearly declare "sulphur dioxide and/or sulphites" on the label.
- In non-prepacked foods and drinks (for example, in restaurants or bars), allergen information must be available on request from food businesses.

Sulphites in wine

- Red wines generally contain lower sulphite levels than white or rosé wines because tannins and other natural compounds in red wine can help provide antioxidant protection and preservation.
- Sparkling wines and Champagne often contain relatively high sulphite levels to help preserve freshness and quality.
- Dessert wines may contain some of the highest sulphite levels because their high sugar content increases the risk of spoilage during production and storage.
- Organic, natural and biodynamic wines vary between producers, but they often contain lower levels of added sulphites than conventional wines. Some may be labelled "No added sulphur" or "No added sulphites", meaning no sulphites were intentionally added during winemaking. However, small amounts of sulphites produced naturally during fermentation are still usually present, so virtually no wine is completely sulphite-free.

Food Allergens in alcoholic drinks

Added ingredients, processing aids, and the foods used to make alcoholic drinks can cause true allergic reactions. Alcoholic drinks may contain grains (for example barley or wheat in beer), fruit (such as grapes in wine or apples in cider), milk (cream liqueurs), egg (for example eggnog or egg white used in cocktails), nuts (most commonly in liqueurs), and other foods such as spices.

Cocktails may contain milk or cream, egg white for froth and texture, fruit syrups, nut-based ingredients and other allergens. Garnishes can also introduce allergens, for example celery in a Bloody Mary or pink peppercorns used in some gins. Pink peppercorns are botanically related to cashew and pistachio, and people with cashew allergy may be at increased risk and should exercise caution unless they are known to tolerate them.

Most distilled spirits made from grains or tree nuts are considered low risk because allergenic proteins are usually removed during distillation. However, reactions may still occur in very sensitive individuals. Nut-derived flavourings added after distillation pose a higher risk for people with nut allergy.

Nuts may be present in some liqueurs, flavoured spirits, cocktails and craft beers. Examples are certain brands of Amaretto, hazelnut liqueurs such as Frangelico, walnut liqueurs, pistachio liqueurs, nut syrups (such as Orgeat almond syrup) and Nocino (an Italian herbal liqueur made using green walnuts).

Many commercial brands of Amaretto do not contain almonds or other nuts and instead use flavourings derived from apricot kernels. However, traditional or smaller-batch amarettos may contain nuts. People with tree nut allergy should therefore avoid amaretto unless the ingredients have been checked and the product is known to be nut-free.

Fining agents made from egg, milk, or fish proteins may be used during wine production to clarify the drink before bottling. These usually leave only very small residues, and most allergic people will not react. However, reactions have been reported rarely in highly sensitive individuals.

Conventional beer, lager, and stout contain gluten and are not suitable for a gluten-free diet. Gluten-free options are available, but some may still contain trace amounts of wheat or barley, so people with allergies to these grains should check labels carefully. Cider, wine, sherry, spirits, port, and liqueurs are usually free from gluten and gluten-containing grains. In spirits, proteins from grains are removed during distillation, but flavourings added after distillation are more likely to introduce allergens.

Many plant foods, including grapes, barley, wheat and nuts, contain non-specific lipid transfer proteins (ns-LTPs). Allergy to ns-LTP is rare but can be severe and unpredictable. Reactions may occur soon after eating or sometimes hours later. Alcohol can act as a co-factor, making allergic reactions more likely or more severe.

If you suspect an allergic reaction to a food or drink, it is important to seek advice from your doctor, who may refer you to an allergy specialist. Many commercial tests for food allergy or intolerance are not reliable, so advice from a certified healthcare professional is recommended.

The table on the next page details examples of ingredients and processing aids found in alcoholic drinks.

Suspected reactions to alcoholic drinks

Avoidance is the most reliable way to prevent symptoms caused by allergy, intolerance or non-allergic hypersensitivity

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Ingredient	Alcoholic drinks where it may be found
Gluten-containing grains (barley, wheat, rye)	Beer, lager, stout, some ales
Grapes	Wine, Champagne
Apples and other fruits	Cider, fruit liqueurs, fruit-flavoured drinks
Milk	Cream liqueurs, some cocktails, occasionally as a fining/refining agent in wine
Egg	Eggnog, cocktails containing egg white, occasionally as a fining/refining agent in wine
Nuts	Nut liqueurs, flavoured spirits, some cocktails
Sulphites	Wine, cider, dried-fruit liqueurs, some beers
Celery	Often a garnish in Bloody Mary cocktails
Pink peppercorn	Some gins and cocktails
Fish	Occasionally as a fining agent in beer or wine

Table 1. Examples of ingredients and processing aids found in alcoholic drinks

to alcoholic drinks. If symptoms occur with all or a wide range of alcoholic drinks, this may suggest a problem with alcohol itself, such as difficulty breaking down alcohol or alcohol worsening another underlying condition.

In the UK, alcoholic drinks with an alcohol content above 1.2% ABV are not required to carry a full ingredients list. However, ingredients included in the 14 regulated allergens must still be declared where present. For example, wine containing sulphites must declare "Contains sulphites", cream-based liqueurs must declare "Contains milk", and nut liqueurs containing nut ingredients must declare "Contains nuts".

Some ingredients used during alcohol production may not need to be declared if processing removes them from the final product or only negligible residues remain. This may apply to ingredients used before distillation and to some fining or refining agents used during production.

It is thought that the risk of reactions to these very small residual amounts is low, although reactions may still be possible in particularly sensitive individuals. Allergens added after distillation or before bottling are more likely to remain in the final drink and usually require declaration.

Because a full ingredients list is often not provided, people who have a known food allergy, or who have experienced a suspected allergic or hypersensitivity reaction to an alcoholic drink, are strongly advised to contact the manufacturer for further information about ingredients, allergens and processing methods to help identify possible triggers and determine whether a product is suitable for them.

If you notice reactions to some drinks but not others, it can help to keep a detailed record of what you drank, what you ate, when symptoms occurred, and the symptoms experienced. This may help identify possible triggers.

For reactions suspected to be caused by a specific ingredient, it is important to avoid that ingredient and seek medical advice.

Some people with non-allergic hypersensitivity may tolerate smaller amounts of certain drinks, or drinks containing lower levels of substances that can trigger symptoms, such as sulphites, histamine, other vasoactive amines, or other naturally occurring compounds.

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