Allergic reactions to alcohol

ASCIA Education Resources
Patient Information

In contrast to flushing, irritant and toxic reactions to alcohol, allergic reactions to alcohol are relatively uncommon. In people with alcohol allergy, as little as 1 ml of pure alcohol (equivalent to 10 ml of wine or a mouthful of beer) is enough to provoke severe rashes, difficulty breathing, stomach cramps or collapse. Alcohol can also increase the likelihood of severe allergic reactions (anaphylaxis) from other causes like food.

Allergy tests to alcohol are usually negative
The human body constantly produces small amounts of alcohol itself. Normal levels of 0.01 to 0.03 mg of alcohol/100 ml are contained in the blood. By contrast, a blood alcohol limit for driving of 0.05 per cent is equal to around 50 mg of alcohol/100 ml of blood. Since the human body produces alcohol itself, the reasons why some unlucky individuals develop allergic reactions when they drink alcohol is curious. Allergy tests using alcohol are usually negative, but are sometimes positive to breakdown products of ethanol such as acetaldehyde or acetic acid ("vinegar").

Flushin is not an allergic reaction
Some people develop severe facial flushing if they drink small amounts of alcohol. This is not an allergic reaction and is most common in those with an Asian background. Other side effects may also occur, including fluttering of the heart (palpitations), feeling hot, headache, tummy discomfort or a drop in blood pressure are related to high blood acetaldehyde levels. Not all flushing is due to alcohol. Flushing can occur in skin conditions like rosacea, the menopause, low blood sugar levels (hypoglycaemia), and sometimes as a response to some antibiotics or medicines used to treat diabetes or high blood fat levels.

Alcoholic beverages contain ethanol and other substances
The liver breaks down the alcohol (ethanol) we drink and converts it to a chemical called acetaldehyde. Acetaldehyde is then transformed to acetic acid ("vinegar"). Problems occur if alcohol cannot be broken down. As well as ethanol, alcoholic beverages contain a complex mixture of grape, yeast, hop, barley or wheat-derived substances, natural food chemicals (eg. salicylates), wood-derived substances or preservatives like sodium metabisulphite. Severe allergic reactions have been described in people with allergies to proteins within grapes, yeast, hops, barley and wheat. These patients are not sensitive to alcohol itself. Furthermore, "fining agents" (like egg protein and seafood proteins) are sometimes used to remove fine particles. Whether these occur in sufficient amounts to trigger allergic reactions is unknown.

Asthmatic reactions may occur due to metabisulphite
Up to a third of people with asthma complain that wine will worsen their asthma, less often with beer or spirits. Beer, wine and champagne contain sodium metabisulphite (additive 220, 221), used as a preservative since Roman times. Some people, particularly those with unstable or poorly controlled asthma, may wheeze when they consume these drinks. In general, there is more preservative in white
wine than red wine, and more in cask wine than bottled wine. The amount of metabisulphite also
varies from brand to brand. Some "low sulphite" wines are available, although those with extreme
sensitivity may not be able to tolerate them. This is because some grape growers will dust sulphur
powder over grapes in the weeks leading up to harvest. Other sources of metabisulphite include
vinegar, pickled onions, dried fruit, or when dusted onto crustaceans and some restaurant salads or
fruit salads. Even when people complain that wine triggers asthma, metabisulphite may not be the
only explanation.

**Asthma can also be due to enzyme deficiency**
Those with low levels of aldehyde dehydrogenase accumulate high levels of acetaldehyde after
drinking alcohol, as they cannot break it down easily. Acetaldehyde has been blamed for asthmatic
reactions to alcohol in up to half of Japanese asthma patients.

**Histamine and other substances may also cause problems**
Histamine can trigger sneezing, runny nose and sometimes wheeze, stomach upset and headache.
Although the actual amounts vary from wine to wine, in general there is more histamine in red than
white wines, and more in shiraz than cabernet. Some challenge studies suggest that antihistamines
may reduce the severity of problems after wine, but as the challenge was equivalent to only one glass,
these medicines probably won’t prevent a hangover! Others substances within wine may also cause
problems to some unlucky individuals, but these are not well defined.

**The presence of alcohol may not always obvious**
There are many less obvious sources of alcohol in our diet. These include alcoholic soft drinks, mixes,
spiked drinks, food marinades or tomato puree. Over-ripe fruit can ferment, resulting in enough alcohol
production to trigger a reaction. Some medicines like cough syrups and some injected medicines also
contain alcohol to help them dissolve and stay in liquid form.

**Management of alcohol allergy**
Accidental exposure may lead to unexpected reactions. People with alcohol allergy should be
managed in the same way as others with serious allergic reactions: identify and avoid the cause, wear
a Medic Alert bracelet, and carry adrenaline (epinephrine) as part of an emergency action plan if they
are at risk of dangerous allergic reactions in the future.

**Milder reactions to alcohol may also occur**
Alcohol sometimes worsens symptoms in people with hives / urticaria. Occasionally, alcohol can also
trigger hives. As with more serious allergic reactions, the mechanism is unclear. Contact rashes from
alcohol are very uncommon.

**Not all adverse reactions to alcohol are due to allergy**
Other effects of alcohol toxicity are well known, including its effect on the liver, stomach, brain and
mental functioning in large amounts. Even though alcohol has a relaxant effect on the brain, some
individuals will experience paradoxical agitation and anxiety. Such symptoms are due to the drug-like
activity of alcohol. These “reactions” do not represent "allergy" anymore than a "hangover" does.

**References**
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2. Boehncke W-H, Gall H. Ethanol metabolite acetic acid as causative agent for type-I hypersensitivity-like
17. PrzybillaB, Ring J. Anaphylaxis to ethanol and sensitization to acetic acid. Lancet 1983; 483.

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For further information on allergy, asthma or immune diseases visit [www.allergy.org.au](http://www.allergy.org.au) - the website of ASCIA is the peak professional body of Clinical Allergists and Immunologists in Australia and New Zealand.

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