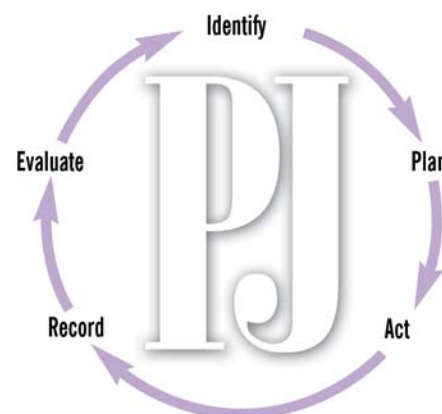


Can hangovers be prevented or cured?

As party season kicks off, Pam Mason takes a look at some old and new hangover remedies and the theories behind how they might work



Identify knowledge gaps

1. Name a product sold for hangovers.
2. How is it meant to work?
3. Would you recommend it?

Before reading on, think about how this article may help you to do your job better. The Royal Pharmaceutical Society's areas of competence for pharmacists are listed in "Plan and record", (available at: www.rpsgb.org/education). This article relates to "appropriate management of common symptoms" (see appendix 4 of "Plan and record").

Over Christmas and the new year, thousands of people will suffer the after effects of drinking too much alcohol, known collectively as a hangover. Having a hangover means suffering from a combination of any of the following symptoms after drinking alcohol:

- Headache
- Nausea or vomiting, or both
- Mild diarrhoea
- Tremor
- Red eyes
- Thirst
- Generally feeling unwell
- Sensitivity to light and noise
- Hot flushes
- Aching muscles
- Dizziness
- Fatigue
- Feeling depressed or irritable
- Poor concentration and memory
- Impaired visual spatial skills

Hangovers can have serious consequences in terms of safety (eg, driving skills can be impaired even when blood alcohol levels have fallen below 80mg/100ml — the legal limit for driving) and the economy (eg, hangovers can cause poor job performance or hangover-related absences).

What causes a hangover?

Alcohol depresses the central nervous system so that co-ordination, memory and judgement are impaired and vision and hearing are distorted. Other effects of alcohol include vasodilation and reduced blood glucose.

However, the causes of alcohol hangovers are not fully understood. Several culprits, such as dehydration and acetaldehyde, have been suggested. The sleep disturbances associated with excessive drinking can also contribute to a hangover.

Dehydration Alcohol acts as a diuretic (it inhibits the effect of antidiuretic hormone on the kidneys) so drinking too much of it causes dehydration. This, in turn, can result in many hangover symptoms including headache and thirst. Headache can be made worse by vasodilation.

Acetaldehyde Acetaldehyde is the main metabolic product of ethanol. It can cause flushing, a throbbing headache, palpitations and nausea, as well as a host of other symptoms. It is on this basis that disulfiram (Antabuse) is used to treat alcohol dependence — disulfiram blocks the oxidation pathway so acetaldehyde accumulates.

Congeners The severity of hangovers appears, in part, to be determined by the concentration of congeners in the drink. Congeners include substances such as amyl alcohol, butyl alcohol, methyl alcohol, propyl alcohol and isopropyl alcohol. They are present as impurities in most drinks to varying degrees, but they also give drinks flavour, smell and colour. Vodka, gin and other clear alcoholic drinks are generally lower in congeners than

darkly coloured drinks (eg, whisky, port, brandy, bourbon, red wine) because of the filtering and distillation processes involved in making them, and are, therefore, associated with a less intense hangover.

What are the cures?

Not surprisingly, there is an enormous variety of "hangover cures". Perhaps the best known is "hair of the dog", which involves drinking more alcohol. This is supposed to alleviate the withdrawal symptoms of an alcohol overdose, but the effects are temporary and the hangover has to be faced at some time. Some say that cocktails like a Bloody Mary are great restoratives but this behaviour should not be encouraged because it can lead to alcohol abuse.

Other remedies advocated by drinkers include blended recipes containing ingredients such as cabbage, bananas, eggs, honey, olive oil, lemon juice, tomato ketchup, Tabasco sauce and Worcester sauce. Drinking caffeinated drinks (eg, coffee, cola) or eating cold pizza, yeast spread on toast or dry toast on its own are other common suggestions. There is no hard evidence that any of these help. Isotonic drinks have also been recommended to achieve quick rehydration.

Over-the-counter products A number of over-the-counter medicines are frequently

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Panel 1: Tips for reducing hangover risk and severity

- Give your body time to metabolise the alcohol — limit yourself to one drink per hour
- Alternate alcoholic drinks with non-alcoholic drinks to reduce the amount of alcohol consumed. This might also help to reduce the dehydrating effects of alcohol
- Eat a meal before drinking — food in the stomach slows the absorption of alcohol and may reduce the risk of a hangover
- Drink plenty of water before you go to bed
- Avoid or limit drinks that contain congeners, such as whisky, brandy and cheap red wine

used to alleviate hangovers. Some, such as Alka-Seltzer, Andrews Plus and Resolve, are marketed as stomach settlers and not specifically for hangovers. They contain an analgesic together with antacids (usually carbonates and bicarbonates), and dissolve in water to produce a fizzy drink. Anecdotally, they help some people, although hangover sufferers may not welcome the bloated feeling from a carbonated drink. In any case, if the person has nausea or vomiting he or she may be unable to keep anything down.

Analgesics, such as aspirin, ibuprofen and paracetamol, are frequently used to treat hangovers, but whether they are effective is debatable. Products containing paracetamol might be preferable because aspirin can further irritate a delicate (and empty) stomach.

Eye drops containing naphazoline can be recommended for red eyes.

Preventing hangovers

Unfortunately, the best advice for preventing a hangover is not to drink alcohol at all or to drink it in moderation. However, such advice usually falls on deaf ears, particularly during Christmas and new year celebrations. Tips for reducing the severity of a hangover are listed in Panel 1.

A recent review¹ found that taking tolfenamic acid on the night of alcohol consumption was associated with a small improvement in hangover symptoms. The following morning, participants who received tolfenamic acid reported less headache, nausea, vomiting and thirst. Other non-steroidal anti-inflammatory drugs, including aspirin and ibuprofen, have not been studied for this indication.

In fact, few trials on treating hangover symptoms have been conducted and the number of subjects is usually small.

Complementary remedies A variety of complementary remedies and nutritional supplements containing sugars, succinic acid, fumaric acid, L-glutamine, herbs (eg, milk thistle, artichoke) charcoal, calcium carbonate, vitamins and minerals are marketed as hangover cures. Panel 2 gives examples of such products and lists their ingredients. Some of these are only available on the internet. Usually, a dose is taken with the first drink,

repeating the dose after a specified number of drinks.

The rationale for the inclusion of many of these substances (eg, dextrose, succinic acid, fumaric acid, L-glutamine) is that they either inhibit the formation of acetaldehyde or they accelerate its metabolism and removal from the blood stream. Sugars are also added in an attempt to limit the blood glucose lowering effect of alcohol. Charcoal is believed to absorb congeners.

Herbal ingredients such as artichoke and milk thistle are included on the basis that they can help to detoxify the liver. B vitamins and vitamin C are lost through diuresis and this forms the rationale for their inclusion.

Whether these products work is debatable. Product websites contain testimonies of benefit, but evidence from clinical trials on these remedies, either for the prevention or treatment of hangovers, is limited.

A recent review summarised evidence from randomised controlled trials for gamma-linolenic acid from *Borago officinalis* (borage), *Cyanara scolymus* (artichoke), *Opuntia ficus indica* (prickly pear cactus) and yeast.² Borage, prickly pear cactus and yeast were associated with some benefit in hangover symptoms, while artichoke did not seem to be effective. The reviewers stated that the results with *O ficus indica* were not as positive as they appeared in the original paper which, for example, included the risk of a severe hangover being halved. There was no significant difference in mean overall hangover symptom index between the treated and placebo groups.

Vitamin B₆ In one placebo-controlled cross-over trial, (n=17), participants given 1,200mg of vitamin B₆ in three divided doses experienced 50 per cent less severe hangover symptoms than those given a placebo. However, the safe upper level for vitamin B₆ recom-

Panel 2: Products marketed for preventing hangovers

Product	Main ingredients
Chaser	Calcium carbonate, charcoal, vitamin B ₂
Hangover-Over!	Chlorella, artichoke, lemon balm, vitamin C, Siberian ginseng, selenium, echinacea, dandelion extract, milk thistle, B vitamins
Rebound	Succinic acid, fumaric acid, L-glutamine, dextrose, vitamin B ₁ , B ₁₂ , folic acid, vitamin C, barley grass juice, L-cysteine
RU 21	Succinic acid, fumaric acid, L-glutamine, dextrose
Russia Party	Dextrose, succinic acid, L-glutamine, fumaric acid, vitamin C, potassium, milk thistle, sesamine extract, B vitamins

mended by the Food Standards Agency is 10mg per day for long-term use.

A report on the safe upper levels for vitamins and minerals by the FSA's expert group on vitamins and minerals states that large doses of pyridoxine (usually quoted as over 2,000mg per day) can cause nerve damage. In addition, the report states that long-term use of vitamin B₆ (generally in excess of 200mg daily) has been reported to result in paraesthesia (tingling hands and feet), somnolence and low serum folic acid levels. The side effects of taking 1,200mg occasionally are uncertain so this should not be recommended.

Conclusion

There are many hangover cures, both old and new, but the only evidence-based cure is time and rest. As well as being sympathetic to hangover sufferers, more importantly, pharmacists can play a key role in the promotion of sensible drinking. They should also be alert to the signs of alcoholism and be able to direct those in need to local services for specialist help.

References

1. Wiese J, Shilpak MG, Browner WS. The alcohol hangover. *Annals of Internal Medicine* 2000;132:897-902.
2. Pittler MH. Complementary therapies for alcohol hangovers. *Focus on Alternative and Complementary Therapies* 2004;9:265-8.

Resources

- Alcohol misuse was covered in an earlier CPD article. Mason P. Alcohol misuse — a case study. *Pharmaceutical Journal* 2003;271:777-9.

Action: practice points

Reading is only one way to undertake CPD and the Society will expect to see various approaches in a pharmacist's CPD portfolio.

1. Look at the products you stock. Think about which would be the best to recommend for a hangover and why.
2. Surf the net for hangover cures, eg, visit www.hangoverreview.com
3. Read the section on vitamin B₆ in the "Safe upper levels for vitamins and minerals" report available at: www.food.gov.uk

Evaluate

For your work to be presented as CPD, you need to evaluate your reading and any other activities.

Answer the following questions:

What have you learnt?

How has it added value to your practice? (Have you applied this learning or had any feedback?)

What will you do now and how will this be achieved?