



THE FAMILY PHARMACIST

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HANGOVER—A MALADY TO AVOID

Why is it appropriate to write a newsletter on the subject of hangover? You might be surprised to learn the number of articles in the medical and scientific literature on this topic. An online search of just one national medical database turned up over 1800 articles that at least mention the subject, and hundreds that discuss it in detail. Why such interest in the after-effects of alcohol overuse that we call hangover?

The answer is that alcohol abuse inflicts a great deal of medical, social, and economic pain on the lives of many people. Impaired productivity among the US workforce costs the economy an estimated \$178 billion annually! The result of hangover-related absenteeism and poor job performance. This is just the economic impact of hangover, not the additional related cost of dealing with medical problems caused by alcohol overuse later on. According to one large insurance company study a few years ago, most employers believe alcohol is the number one threat to employee well-being and the main reason for sickness absence. And, of course, the pandemic didn't help.

To focus on "hangover" we need to define it. An article that appeared in the *Annals of Internal Medicine* stated, "The alcohol hangover is characterized by headache, tremulousness (shakiness), nausea, diarrhea, and fatigue combined with decreased occupational, cognitive, or visual-spatial skill performance." Chris Williamson, a YouTube contributor, admits: "Hangover is (among other things) an acute, self-induced depression."

This bleak overview of hangover fascinates researchers because the symptoms persist when there is *no longer any alcohol in the blood*. If you were sick from an infectious organism, your symptoms usually persist as long as whatever is causing the infection is still somewhere in your body. When you take an antibiotic (for example) and kill the bug, you begin to feel better. Not so with alcohol. Most people feel pretty good while the alcohol is still in their blood. It's when your blood level drops to zero that you begin to feel bad. This lasts about 24 hours. And study after study has shown that mental and physical abilities continue to be *significantly impaired* during this time with no alcohol in the blood!

So, why do people feel bad for so long afterwards? It seems to be the way alcohol is metabolized by the body, leaving a surge of aftereffects in its wake. This will change with age, gender, ethnicity (genetics), nutritional status, and numerous other factors. Changes due to alcohol consumption affect urine production and elimination, sleep disruption, gastrointestinal functioning, blood sugar levels, and acute inflammation throughout the body. And even though all of these changes have been studied by researchers, investigators still know little about how to prevent or treat a hangover with remedies.

How much alcohol is too much? The obvious way to prevent a hangover is to not drink at all. But many otherwise healthy people think that moderation is the key to preventing hangover. This is clearly an individual decision. Most people who drink alcohol know what their limit is (or should be) to prevent feeling bad the next day.

With so many individual factors involved in the metabolism of alcohol, only a rough estimation can be given on the math of "how much." A typical 6-ounce pour of wine, a 12-ounce 5% beer, and a shot of hard liquor (whiskey, Scotch, etc., 80 proof) will each contain at least 18 milliliters of alcohol (ethanol). Every drink will raise your *blood alcohol concentration* (BAC) by approximately 0.02%. A BAC four times this amount (four typical drinks or more in one hour) makes operating a motor vehicle in all fifty US states illegal.

Even though most people can handle one or two drinks within a short period of time without observable signs of impairment, no matter how much alcohol you consume your body is limited by how much alcohol it can process each hour. It's kind of like a train going through a tunnel. The train cars line up one at a time to get through the tunnel. If you drink more alcohol than your liver can process every hour, then each successive drink stacks up and has to wait until your liver is ready to handle it. Drinking faster than your body can metabolize alcohol over any amount of time can give you a BAC that will have you waking up with a hangover.

Something that is important to understand is that some people have *fast* livers and some are *slow* metabolizers. Studies show that

people whose livers eliminate the alcohol quickly have less severe hangovers or none at all (about one in four heavy drinkers). But, this does not mean that their mental and physical abilities are unaffected.

Is there a cure for hangover? People selling remedies would like you to think there is, but the answer is, no. In fact, many wonder if a cure is really necessary. Hangover may be a deterrent to over imbibing in the future. Things being what they are, most people want an over-the-counter (OTC) quick fix to feel better. Is there anything off-the-shelf in stores to remedy a hangover?

FOLK REMEDIES. Hundreds of these have been touted and tried over the years. Ginger, chicken soup, tomato juice, honey, ginseng, and even alcohol ("a little hair from the dog that bit you"), to name just a few. While an occasional popular magazine article may suggest some benefit from a particular folk remedy, in reality they do little more than provide a measure of comfort. Sleep and time are what really make you feel better. Popular sayings like, "beer before liquor, never sicker," or "beer before wine and you'll feel fine" are nothing more than clichés. An article in the 2019 *American Journal of Clinical Nutrition* showed that symptoms of a hangover are a result of the *quantity* of alcohol consumed not the type of drink or order in which you consume them.

NUTRITIONAL DRINKS. To maintain proper hydration, there is no evidence that coconut water, coffee, or electrolyte drinks (Gatorade,[®] Pedialyte,[®] etc.) work better than just *plain water* for a hangover. While losing a lot of water from drinking alcohol makes you thirsty, being hungover does not seem to mess up the body's electrolyte balance significantly. That's why drinking these expensive beverages won't cure a hangover.

OTC DRUGS. The US Food and Drug Administration (FDA) recognizes "hangover" and "overindulgence in food and drink" as a legitimate indication for certain OTC drugs. The most common ones are pain relievers for headache, antacids for stomach distress, and caffeine for fatigue and

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“dullness.” In addition to pain relievers and antacids, you may have seen hangover remedies in the checkout line at convenience stores. Blowfish[®], Goody’s[®] Hangover powders, and Alka Seltzer[®] Hangover Relief are a few examples. These brands all contain aspirin and caffeine. Aspirin may be risky for some people due to drug interactions and it can further irritate a stomach recovering from too much alcohol. An occasional drinker who overdoes it once in a while can safely take a dose or two of OTC acetaminophen (Tylenol[®]) for body ache and headache. Chronic heavy drinkers should avoid acetaminophen due to risk of liver toxicity, and stay away from the nonsteroidal anti-inflammatory drugs (NSAID), like Advil[®], Motrin[®], Aleve[®], etc. Antacids for stomach upset are appropriate for a hangover, but make sure you pick one without aspirin, like Tums[®], which only contains the antacid, calcium carbonate.

VITAMINS AND SUPPLEMENTS. Products like Purple Tree[®] (labeled, “for a great day after celebrating”), DeToxx[®] (“Better mornings after night outs”) and Flyby[®] (“Recovery—Post party relief”) contain various combinations of multivitamins along with other herbs and supplements. The individual ingredients in these products have shown no reliable evidence that they prevent or cure hangover. Ingredients may include dihydromyricetin (DHM, an herbal derivative), milk thistle, vitamin B complex, white willow bark extract, cactus prickly pear extract, and quercetin (a plant extract). Activated charcoal (usually available as tablets) is another “supplement” often recommended as a remedy for hangover, explaining that the charcoal will “absorb” the “impurities” in alcohol. By the time you are hungover, there is no alcohol in the gastrointestinal tract for the charcoal to interact. So, there is no reliable evidence that charcoal can prevent or treat hangovers.

OTHER THERAPY. Hangover “clinics” have popped up around the US in recent years. They offer intravenous fluids to speed rehydration and usually add vitamins and sometimes nausea and pain medicine to the bag of IV fluid. Cost, possible electrolyte imbalance, and exposure to infection all make this a really bad idea.

Summary

There is no medicinal cure for a hangover. No drug remedy. While OTC medicines may relieve some of the symptoms, time and sleep must repair the damage done to your body. Remember, for most people, your liver can only process about one drink per hour. Staying hydrated with plain water on an evening out is a good idea whether you choose to drink or not. Consuming an alcoholic beverage with dinner or *after* you eat is also a good idea because food significantly slows the absorption of alcohol from the stomach into the bloodstream. And remember that hangover causes physical and mental impairment the “morning after,” even though you have no alcohol remaining in your blood. According to the National Institute on Alcohol Abuse and Alcoholism, the only true prevention for a hangover is to choose not to drink or keep alcohol ingestion to a minimum.

References on file

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