Dear Alice,

I have never had a problem with alcohol tolerances in the past. I could drink at least four or five drinks and be fine that night and the next morning. Now, I find myself getting violently sick after drinking just one or two. Even after a glass of wine I want to puke it up. Is there something physically wrong with me? I know the obvious solution is to stop drinking entirely. But, I shouldn't be this sick after drinking just one drink. Have you ever heard of this before? Can you help me figure out the problem?

Answer

Dear Reader,

It's possible for a person to develop a resistance or allergy to a specific food or drink, even one that hasn't caused problems in the past. Many biological, psychological, and social factors influence how you feel when you drink alcohol. How you feel is described in terms of tolerance.

Alcohol tolerance means that after a period of ongoing drinking, on future occasions, consumption of the same amount of alcohol produces a lesser effect of intoxication, or that increased amounts of alcohol are needed to produce the same effect. Scientists refer to tolerance in two categories — functional and metabolic. Functional tolerance is when brain functions adapt to compensate for the physiological and behavioral effects of alcohol. For instance, heavy drinkers have functional tolerance when they show few signs of intoxication, even though they're at an elevated blood alcohol concentration (BAC) level. Metabolic tolerance, which has to do with specific enzymes, is the rate at which the body processes and eliminates alcohol.

Factors relating to metabolic tolerance might help explain why you're feeling sick from one drink. Alcohol is absorbed primarily from the stomach and small intestine and metabolized mainly in the liver by an enzyme called alcohol dehydrogenase (ADH). If insufficient ADH is produced in the liver, the body will not be able to metabolize alcohol. A second enzyme, aldehyde dehydrogenase (ALDH), also plays a role in metabolism. Some people lack ALDH, which is often associated with facial flushing, sweating, and/or becoming ill after drinking small amounts of alcohol. Recent studies suggest women have fewer alcohol metabolizing enzymes than men.
The fact that women typically have higher body fat percentages also causes them to metabolize alcohol differently — in particular, a woman will typically have a higher blood alcohol concentration level than a man, even after consuming the same amount of alcohol.

Other than metabolism, why else might you feel uncomfortable or sick after one drink?

- **An irritated stomach:** Alcohol directly irritates the esophagus, stomach, and intestines, causing inflammation of the stomach lining. Alcohol increases the production of gastric (stomach) acid, and can also cause a build up of triglycerides (fat compounds and free fatty acids) in liver cells. Any of these factors can result in nausea or vomiting.

- **Sulfites in wine:** You mention wine. Wines contain small amounts of sulfites. Sulfites are a natural by-product of the fermentation process that turn grapes and grape juice into wine. Winemakers add additional sulfites to wine to make the wine "last longer" — meaning sulfur acts as a preservative, helping to prevent organisms, such as bacteria, from growing in the wine. Sulfites are also present in a variety of processed and cooked foods. Depending on whether or not someone has a sensitivity versus an allergy to sulfites, symptoms include hives, breathing difficulties, even anaphylactic shock, which is life-threatening. If you think you are allergic, you can find wine without sulfites.

- **Congeners:** Most alcohol contains smaller amounts of other biologically active compounds, known as congeners, which contribute to the taste, smell, and look of a beverage. Drinks containing more pure alcohol, such as gin and vodka, have fewer congeners than drinks with less pure alcohol, such as red wine and whiskey. Drinks with fewer congeners may lead to less severe hangover symptoms, including nausea, than drinks with more.

Other factors that influence tolerance and metabolism include:

- **Genetics:** Studies suggest genetic factors are associated with a person's sensitivity to the effects of alcohol, so it's good to know your family history.

- **Medication:** Alcohol can be harmful, even in small amounts, when consumed in conjunction with certain medications and/or other drugs. To learn more about the interaction of alcohol and medications, check out, "Harmful Interactions: Mixing Alcohol with Medicines," [2] published by the National Institute on Alcohol Abuse and Alcoholism (NIAAA).

- **An empty stomach:** Eating a substantial meal before drinking alcohol will slow the absorption process. If you are drinking alcohol on an empty stomach, that may increase your chances of feeling unwell.

- **Age:** Usually, it takes fewer drinks to become intoxicated as we get older, because as we age, we process alcohol more slowly.

Certain health conditions, such as high blood pressure, ulcers, sleep apnea, and severe acid reflux, require abstinence from alcohol altogether. To give you an example of why health status plays such a major role in alcohol tolerance, consider pancreatitis. Pancreatitis is a disease that occurs when the pancreas, an organ behind the stomach, becomes inflamed. Pancreatitis can be acute or chronic, caused by a history of drinking alcohol, go undiagnosed, and if not diagnosed and treated, can cause major complications. This health condition causes acute nausea, and treatment includes total abstinence from alcohol.

Considering the myriad possibilities behind your sudden nausea and lowered tolerance for
alcohol, it may be a good idea to visit your health care provider to gain insight into your situation. What has been going on in your life lately? Before you have an appointment you might want to make a list of any recent changes like new medications, other medical conditions, dietary changes, stressful events, and anything else you think could be related.

Best of luck feeling better,

Alice!

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