Dear Alice,

My friends take Pepcid AC when they drink to reduce the redness on their faces. Is this safe? I'm worried that it will hurt their stomach linings. Please help.

Thank you,

Red in the Face

Answer

Dear Red in the Face,

It's always good to know more about the safety of how medications and alcohol may mix! Pepcid AC is approved by the United States Food and Drug Administration (FDA) to treat heartburn and other symptoms that result from an excess of acid in the stomach. It’s able to do so through the active ingredient famotidine (which is also its generic name), more broadly known as an H2 blocker [2], which blocks the histamine receptors responsible for triggering acid production. Given that famotidine targets acid in your stomach, it makes sense that you'd be concerned about your friends’ stomach linings. However, research indicates that famotidine is actually responsible for lowering acidity. While famotidine likely won't hurt your friends’ stomach linings, it may not help them reduce redness as a result of drinking, either. While some people do find that the medication helps reduce redness, no studies have shown that famotidine is actually effective in treating redness that results from drinking alcohol. However, research does indicate that H2 blockers, such as famotidine, may actually increase the consumers' blood alcohol level (BAL), also known as blood alcohol concentration (BAC). Read on for a deeper dive into how the body metabolizes alcohol and how taking medications like famotidine may influence the process.

Two enzymes are responsible for metabolizing alcohol: alcohol dehydrogenase (ADH) and aldehyde dehydrogenase (ALDH). ADH transforms ingested alcohol into acetaldehyde (one of alcohol's by-products), and ALDH then transforms acetaldehyde into acetate. When too much acetaldehyde accumulates for too long in the body, many experience redness or flushing, also known as alcohol flush reaction. Why? Some drinkers take longer to metabolize acetaldehyde due to an enzyme deficiency, leading to a sensation of warmth and visible reddening of the skin,
most often in the face, neck, upper portion of the chest, and upper limbs. Flushing typically begins two to ten minutes after ingestion, reaching its peak at 30 to 40 minutes and subsiding after 60 to 90 minutes. A small percentage of the general population experiences more severe symptoms, such as an itchy, swollen rash and alcohol-induced asthma, which may involve an itchy, runny, and stuffy nose, as well as sneezing, wheezing, breathlessness, and coughing.

As mentioned, famotidine targets ADH to slow the conversion of alcohol into acetaldehyde, which may indeed help your friends reduce flushing. Does this mean famotidine can be effective in reducing flushing? Potentially, but unfortunately it’s not that simple (and there's not research to suggest that it would work). Variations of the ADH and ALDH enzymes (for example, ADH1B*2, ADH1C*1, and ALDH2*2) exist, and depending on which you have, famotidine can have a different effect on your alcohol-induced flushing. Some people (and, interestingly, many of East Asian descent) have ALDH2*2, which can’t convert acetaldehyde into acetate quickly enough for famotidine to stop or lessen flushing. Even if famotidine is slowing down the conversion of alcohol into acetaldehyde, the ALDH2*2 converts acetaldehyde to acetate so slowly that acetaldehyde can still build up, meaning that famotidine won’t help them achieve these results. If you have any ALDH variant besides ALDH2*2, famotidine may be able to delay the alcohol flushing response long enough for the acetaldehyde to be converted into acetate, potentially reducing or eliminating a flushing response. However, these results have only been observed in studies in which low levels of alcohol were consumed, and when participants were measured right after breakfast-time.

While taking famotidine with alcohol hasn’t been shown to be harmful or damaging to stomach lining, it does have the potential to increase BAL. In general, within moderation, an increase in BAL may not be a cause for concern. But, consuming famotidine in combination with excessive drinking may lead to more harmful increases in BAL. Additionally, for those that it does successfully block or reduce the flushing, it may lead to further drinking, as they aren’t receiving the flushing cues that may indicate to slow down or stop. It’s wise to consider the effects of mixing a medication with alcohol, as the combination may be harmful or even life-threatening. Medications generally aren’t recommended for uses other than those approved by the FDA, and may not be effective in addressing the symptoms your friends seek to treat. If you have more questions about alcohol and its interactions with medications, it's always great to keep on learning. One place to start would be with the National Institute on Alcohol Abuse and Alcoholism’s fact sheet Harmful Interactions [3].

Here’s to hoping some of your worries are eased, and your responsibility and curiosity persist!

Alice!

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