

The Four Loko effect

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The popular, formerly caffeinated, fruity alcoholic beverage, Four Loko, has been blamed for the spike in alcohol-related hospitalizations, especially throughout college campuses.

Initially, caffeine was deemed the [culprit](#) and the [Food and Drug Administration](#) ordered all traces of caffeine to be removed from Four Loko and all other similar beverages. However, according to an upcoming evaluation in [Perspectives on Psychological Science](#), a journal of the Association for Psychological Science, caffeine might not be the primary cause of the spike in hospitalizations.

"Four Loko didn't have the extraordinary intoxicating effect because of caffeine, but rather because of the phenomenon of situational specificity of tolerance", says Shepard Siegel of McMaster University, who wrote the article to highlight the importance of unusual cues related to [alcohol tolerance](#).

The situational specificity of tolerance implies that [alcohol](#) will have a greater effect if administered in the presence of unusual cues, rather than in familiar settings typically associated with the drug. It has been known, at least since the time of Ivan Pavlov that our bodies prepare for food when it is time to eat, or when we smell the food cooking, or when other [stimuli](#) signal that we will soon be presented with a meal. More recently, it has also been determined that we similarly prepare for a drug.

We have experienced many pairings of certain flavors (e.g., beer, wine) with the [effects of alcohol](#). If we now experience alcohol in the presence

of a novel flavor, such as an ersatz fruit flavor, we end up experiencing a heightened alcohol effect. This is because we have not associated such unusual flavors with the effects of alcohol and therefore do not make any preparatory response to lessen the drug effect.

According to Siegel, previous studies have clearly demonstrated situational specificity of tolerance to alcohol in [university students](#). For example, in one experiment, participants were divided into groups where one was given alcohol in a familiar context – beer in a bar and the second group was given the same amount of alcohol in an unusual context – mixed with sweetened carbonated water in an office. The unusual context group became more intoxicated than the usual context group.

If someone were to continually consume a particular flavor mixed with alcohol, they would eventually form a strong association between that flavor and the effects of alcohol. This would cause the person to build a tolerance and the beverage would no longer be exceptionally intoxicating. Says Siegel, "Four Loko's fruit flavor hasn't been previously paired with alcohol, and because that association between flavor and alcohol hasn't been made, greater intoxication may occur."

In a recent press release, the manufacturer of Four Loko, Phusion Projects, announced a new version of their drink, Four Loko XXX Limited Edition. According to that press release, "The innovative product will feature a brand new Four Loko flavor profile every four months". It is possible that changing the flavors of Four Loko might cause a person to be unable to form an association or tolerance, which increases its intoxication effect.

Provided by Association for Psychological Science

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