

Bourbon versus vodka: Bourbon hurts more the next day, performance is the same

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Many alcoholic beverages contain byproducts of the materials used in the fermenting process. These byproducts are called "congeners," complex organic molecules with toxic effects including acetone, acetaldehyde, fusel oil, tannins, and furfural. Bourbon has 37 times the amount of congeners that vodka has. A new study has found that while drinking a lot of bourbon can cause a worse hangover than drinking a lot of vodka, impairment in people's next-day task performance is about the same for both beverages.

Results will be published in the March 2010 issue of *Alcoholism: Clinical & Experimental Research* and are currently available at Early View.

"While the toxic chemicals called congeners could be poisonous in large amounts, they occur in very small amounts in [alcoholic beverages](#)," explained Damaris J. Rohsenow, professor of community health at the Center for [Alcohol](#) and Addiction Studies at Brown University. "There are far more of them in the darker distilled beverages and wines than in the lighter colored ones. While the alcohol alone is enough to make many people feel sick the next day, these toxic natural substances can add to the ill effects as our body reacts to them."

Rohsenow added that few studies have looked at the effects of high- versus low-congener beverages on next-day hangover or performance, and some of those early studies were not careful to wait until breath alcohol levels (BALs) were close to zero before measuring performance, so results may have included some of alcohol's direct effects.

"We wanted to investigate next-day effects of bourbon versus vodka while ensuring that BALs were zero or almost zero when we studied performance, and we used a variety of performance measures classified by their relevance to safety," said Rohsenow. "We wanted to use a new hangover questionnaire that included only the symptoms that had been found to be valid in laboratory studies of hangover. We wanted to find out if bourbon's effects the next day were due to different effects on sleep, so people's sleep patterns were recorded while they slept. Finally, we wanted to know if performance impairments the morning after drinking were associated with how hung-over the person felt."

Researchers recruited and paid 95 (58 women, 37 men) healthy, heavy drinkers to participate in one acclimatization night, followed by two drinking nights. The participants drank bourbon or vodka to an average of 0.11 g% BAL on one night, with a matched placebo on the other night, randomized for type and order. Polysomnography recordings were made overnight; self-report and neurocognitive measures were assessed the next morning.

"First, while alcohol in the beverage did increase how hung-over people reported feeling the next morning compared to drinking a placebo, bourbon made people feel even worse than vodka did," said Rohsenow. "Second, alcohol in the beverage did make people do worse when they needed to pay attention for a continuous period of time while making rapid accurate choices, but they did no worse after bourbon than after vodka on these tasks. Therefore, while people felt worse, they didn't perform worse after bourbon than after vodka. However, people were not aware that they were performing worse since they thought their driving ability was not impaired in the morning even though they could not react as well." She added that other studies have found that professional pilots do worse on aspects of flying that require continuous attention across tasks the morning after drinking to intoxication.

"A third finding was that while alcohol in the beverages made people sleep less well because they woke up more during the night, this was no worse after bourbon than it was after vodka," Rohsenow said. "This means that bourbon's greater effects on hangover are not due to it having greater effects on sleep. Fourth, people who reported more hangover symptoms also did worse in their ability to pay attention for a continuous period of time while making rapid accurate choices."

Regarding this last finding, that people with more hangover symptoms - feelings of headache, nausea, general lousiness, thirst and fatigue - also performed worse when required to pay continuous attention and make choices, Rohsenow said that feeling worse was perhaps distracting them, or that it just hurt more to use the extra energy needed to pay close attention. "A second possibility is that as alcohol was metabolized into other substances in the body before leaving, these substances had a direct effect on the nervous system in addition to increasing [hangover](#) so that these were two separate but related after-effects of drinking to intoxication," she said.

The bottom line, said Rohsenow, is that becoming intoxicated to a .11 g% BAL makes it less safe for a person to engage in behaviors required for safety-sensitive performance the next morning. "Many safety-sensitive occupations require that workers be able to pay close attention to a number of tasks over a period of time, and to respond quickly with the right choices, and drinking to excess was found to impair this performance just after alcohol had left people's bodies."

Provided by Alcoholism: Clinical & Experimental Research

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