

Energy drinks may increase risk of heart function abnormalities and blood pressure changes

May 29 2019



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Drinking 32 ounces of an energy drink in a short timespan may increase blood pressure and the risk of electrical disturbances in the heart, which affect heart rhythm, according to a small study published in *Journal of*

the American Heart Association, the Open Access Journal of the American Heart Association/American Stroke Association.

The study enrolled 34 healthy volunteers between the ages of 18 and 40 years. Participants were randomly assigned to drink 32 ounces of one of two commercially available caffeinated [energy](#) drinks or a placebo drink on three separate days. The drinks were consumed within a 60-minute period but no faster than one 16-ounce bottle in 30 minutes.

Researchers measured the electrical activity of the volunteers' hearts by electrocardiogram, which records the way a heart is beating. They also recorded participant's blood pressure. All measurements were taken at the study's start and every 30 minutes for 4 hours after drink consumption.

Both energy beverages tested contained 304 to 320 milligrams of caffeine per 32 fluid ounces. Caffeine at doses under 400 milligrams is not expected to induce any electrocardiographic changes. Other common ingredients in the energy drinks in the study included taurine (an amino acid), glucuronolactone (found in plants and connective tissues) and B-vitamins. The placebo drink contained carbonated water, lime juice and cherry flavoring.

In participants who consumed either type of energy drink, researchers found that the QT interval was 6 milliseconds or 7.7 milliseconds higher at 4 hours compared to placebo drinkers. The QT interval is a measurement of the time it takes ventricles in the heart (the lower chambers) to prepare to generate a beat again. If this time interval is either too short or too long, it can cause the heart to beat abnormally. The resulting arrhythmia can be life-threatening.

The results of the study confirm previous findings and suggest that the QT interval changes are generally sustained over the four-hour

monitoring period rather than being a short-lasting effect after consuming 32-ounces of an energy drink.

Researchers also found a statistically significant 4 to 5 mm Hg increase in systolic and diastolic blood pressure in participants who consumed the energy drinks.

"We found an association between consuming energy drinks and changes in QT intervals and blood pressure that cannot be attributed to caffeine. We urgently need to investigate the particular ingredient or combination of ingredients in different types of energy drinks that might explain the findings seen in our clinical trial," said lead author Sachin A. Shah, Pharm.D., professor of pharmacy practice at University of the Pacific, Thomas J. Long School of Pharmacy and Health Sciences in Stockton, California.

The study is the largest controlled study of the effects of energy drinks on the heart and blood pressure in young healthy volunteers. Estimates indicate that about 30% of teenagers between the ages of 12 through 17 years in the United States consume energy drinks on a regular basis, which have been linked to increased emergency room visits and death.

"Energy drinks are readily accessible and commonly consumed by a large number of teens and young adults, including college students. Understanding how these drinks affect the [heart](#) is extremely important," said study co-author Kate O'Dell, Pharm.D., professor of pharmacy and director of experiential programs at the Thomas J. Long School of Pharmacy and Health Sciences.

Among the study's limitations, it was designed to assess the effects of short-term consumption of an energy drink and does not provide insight into long-term effects nor the effects of routine energy drink consumption. Additionally, energy drink consumption was evaluated

alone, and it is not uncommon for energy drinks to be consumed in combination with other substances such as alcohol. Finally, the study included only healthy individuals between the ages of 18 to 40 years and the results may be different in other populations.

"The public should be aware of the impact of energy drinks on their body especially if they have other underlying health conditions," Shah said. "Healthcare professionals should advise certain patient populations, for example, people with underlying congenital or acquired long QT syndrome or high blood pressure, to limit or monitor their consumption."

Provided by American Heart Association

Citation: Energy drinks may increase risk of heart function abnormalities and blood pressure changes (2019, May 29) retrieved 27 April 2024 from <https://medicalxpress.com/news/2019-05-energy-heart-function-abnormalities-blood.html>

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