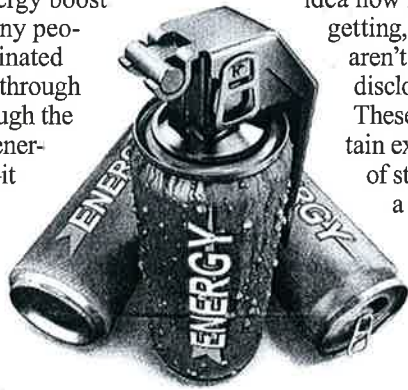




Caffeine Overdrive

Super-caffeinated beverages, such as energy shots and coffee drinks, are all the rage. But they may pose health concerns. EN investigates.

Whether it's on a long car drive or a marathon session at the office, most of us need an energy boost from time to time. Many people turn to super-caffeinated beverages to get them through the task at hand. Although the stimulant caffeine is generally regarded as safe—it has been linked with improved alertness, focus, short-term memory, exercise performance, and even protection from Parkinson's disease and depression when used judiciously—health experts are increasingly sounding the alarm over mega doses consumed in caffeinated beverages.



Caffeine confusion. When you pick up an energy drink, you may have no idea how much caffeine you're getting, since manufacturers aren't required by the FDA to disclose the levels of caffeine. These products also can contain extra caffeine in the form of stimulants like guarana, a seed that contains more caffeine than coffee.

And when you walk into a coffee shop for a java jolt, who knows how much caffeine is in that brew, since levels vary based on type of bean and brewing.

The side effects of caffeine overload.

Scientists have uncovered several health concerns related to overdoing caffeine and energy drinks.

- **Cardiovascular concerns.** "Too much caffeine can overstimulate the nervous system, leading to increased or irregular heart rate and a rise in blood pressure," says Baliga. A 2014 *American Journal of Cardiology* review found adverse cardiovascular events and even cardiac arrest among heavy energy drink users. With caffeine-spiked drinks skyrocketing, you can see why emergency room visits related to these products has increased at least 10-fold in recent years.
- **Insomnia.** Since caffeine can remain in your system for several hours, drinking super-caffeinated beverages later in the day may contribute to insomnia. That's because caffeine can alter your circadian clock (a process responsible for sleep-wake timing), making it harder to fall asleep at your normal time, according to a 2015 study from the University of Colorado. Caffeine also blocks your receptors for adenosine, a neurotransmitter that sends fatigue signals to your body.
- **Poor food choices.** A 2015 University of Texas study found that energy drink users were more likely to make poor dietary choices, such as lower intake

What's in the mix? Energy drinks are typically a mix of caffeine, sugars or artificial sweeteners, flavorings, and add-ins, like taurine, vitamins, and ginkgo biloba. Ragavendra R. Baliga, MD, a cardiologist with the Ohio State University Wexner Medical Center, cautions against such drinks because they have unknown health effects. A 2012 *Nutrition Reviews* report found that the majority of these extras in energy drinks do little to charge your energy levels or alleviate brain fog; basically, pure caffeine is the engine behind these drinks.

Bottled coffee drinks are a blend of strong coffee, often paired with sugar and dairy ingredients. The high-caffeine elixir market even includes bottled waters and tea bags infused with added caffeine.

THE SWEET SPOT FOR CAFFEINE

Ragavendra R. Baliga, MD advises that adults should limit their caffeine intake to less than 500 milligrams (mg) per day, and adolescents should limit consumption to 100 mg per day. A standard serving of traditional coffee has roughly 80 mg and tea has 15-70 mg (depending on type), but super-caffeinated drinks can reach upwards of 260 mg per serving.

Nitro Brews

Here's the caffeine content of popular caffeinated beverages.

DRINK (SERVING)	CAFFEINE
Starbucks coffee, tall (12 oz)	260 mg
5 Hour Energy Shot (1.9 oz)	208 mg
Monster Energy Drink Java Monster (16 oz)	200 mg
Dunkin Donuts Coffee, medium (14 oz)	178 mg
Rockstar Energy Drink (16 oz)	160 mg
Monster Energy Drink (16 oz)	160 mg
Full Throttle Energy Drink (16 oz)	160 mg
Starbucks Espresso (2 oz)	150 mg
Starbucks Double Shot Energy Coffee Drink (15 oz)	145 mg
High Brew Cold Brew Coffee (8 oz)	139 mg
Red Bull Energy Drink (8.4 oz)	80 mg

Note: oz=ounce, mg=milligram

- of fruits and vegetables, skipping breakfast, and consuming higher amounts of sodas and frozen meals.
- **Risky behavior.** A perilous trend among the young is to mix energy drinks with alcohol. The stimulatory effects of an energy drink can counteract the sedation normally brought on by alcohol, which can result in more drinking and risky behaviour. And, a 2015 study discovered that the instances of brain injury during sports were higher among adolescents who consumed energy drinks.
- **Sugar blues.** These drinks often come laced with sugar—another vehicle for a short-term energy boost. "The elevated blood sugar can lead to increased risk for obesity, diabetes, and heart disease," says Baliga.
- **Dental problems.** The high acidity levels in energy drinks can erode tooth enamel.

Caffeine naïve. If you're not a regular caffeine user, you're what researchers call "caffeine naïve," and you could be even more susceptible to side effects. Researchers at the Mayo Clinic found that healthy adults who normally consumed little if any caffeine (no more than 160 mg daily) experienced a significantly greater rise in blood pressure in response to drinking an energy drink than those who normally consume higher amounts (more than 160 mg daily). Baliga notes that the degree of caffeine sensitivity among individuals can be highly variable; some people never develop a tolerance to caffeine. ☒

—Matthew Kadey, MS, RD