

Q&A on Energy Drinks: Caffeine and Other Ingredients

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What are energy drinks?

'Energy' drinks have no specific regulatory definition, but are generally classified as drinks which aim to aid mental and physical stimulation and give an increased sense of alertness. They typically contain caffeine and sugar, and often other additional ingredients such as taurine, B vitamins and plant extracts (e.g. ginseng and guarana). The name 'energy' drink can be misleading as they only give consumers a perceived sense of energy and do not typically contain any more energy (i.e. sugar) than other soft drinks.

How much caffeine do energy drinks contain?

The caffeine content in most energy drinks ranges from about 80 mg (roughly the same as a mug of instant coffee) to about 150 mg per serving. Energy drinks which contain over 150 mg of caffeine per litre must be clearly labelled as having 'high caffeine content'.

Is there an upper limit for the amount of caffeine that is healthy to drink each day and what are the main effects of caffeine?

In 2015 the European Food Safety Authority published their Scientific Opinion on Safety of Caffeine. They concluded that it is safe for an adult to consume up to 200 mg of caffeine in a single serving and up to 400 mg of caffeine per day on a regular basis (See EUFIC's article on "EFSA opinion on the safety of caffeine"). Pregnant women are advised to consume a maximum of 200 mg caffeine per day. As well as being a stimulant and decreasing fatigue, caffeine also increases the heart rate and raises blood pressure. High doses of caffeine can cause insomnia, anxiety, tremors, and seizures. Due to individual physiological differences and tolerance levels from prior exposure, some people are more sensitive to the effects of caffeine than others, and should lower their caffeine intake accordingly.

Typical amounts of caffeine found in food and drink products are:

- Standard can of energy drink (250 ml) – 80 mg
- Tea (220 ml) – 50 mg
- Coffee (filter, one cup, 200 ml) - 90 mg
- Coffee (espresso, 60 ml) – 80 mg
- Standard can of cola (355 ml) – 40 mg
- A bar of plain chocolate (50 g) – 25 mg
- A bar of milk chocolate (50 g) – 10 mg

For further information on caffeine and its effects on the body, please see [EUFIC's article on 'Caffeine and Health'](#).

What other ingredients are found in energy drinks and why are they added?

The most commonly found ingredients in energy drinks are:

- Taurine: an amino acid naturally present in the human body that can also be found at low levels in food, particularly meat and fish. It is often included in energy drinks because some studies have suggested that it may improve athletic performance.
- Sugar: Energy drinks generally contain glucose or sucrose (table sugar). Sugars are a source of energy, and therefore energy drinks should be consumed in moderation, in the context of a healthy diet and lifestyle. Sugar free products are available for most brands.
- Glucuronolactone: a chemical produced naturally by the human body and present as part of the structural component of connective tissues. It is sometimes added to energy drinks due to claims of its 'performance enhancing' properties.
- Other commonly-used ingredients include: Guarana, a plant containing caffeine that comes from South America; Ginseng, a herb which has been suggested to improve mental and physical performance, and B vitamins, which help regulate metabolism, and may contribute to the maintenance of mental function.

The claimed health effects of ingredients like taurine, guarana, glucuronolactone and ginseng have not been sufficiently scientifically substantiated and more research is needed.

The European Food Safety Authority (EFSA) has looked at the safety of some of those ingredients, like taurine and glucuronolactone, and concluded that exposure to them, from regular consumption of energy drinks, does not pose a safety concern.

Should children consume energy drinks?

Although caffeine is safe to consume in moderation for the healthy general population, if children drink energy drinks, they should consume smaller quantities than adults, due to their smaller body mass.

Energy drinks which contain high levels of caffeine are not recommended for children. In the EU, with the exception of tea and coffee, it is mandatory for drinks which contain over 150 mg/l of caffeine to advise that their consumption is not recommended for children or pregnant and breastfeeding women. The caffeine content in mg per 100 ml will be provided in brackets. Product labels should be checked on energy drinks before giving them to children.

Children's consumption of energy drinks should also be moderated due to the high sugar content.

Are energy drinks safe to drink with alcohol?

Concerns have been raised about the consumption of energy drinks with alcohol, in particular the mixing of energy drinks with spirits. Research has suggested an effect known as 'wide awake drunk', whereby the

stimulatory effects of the caffeine in energy drinks prevents the drinker from realising how intoxicated they are, potentially resulting in greater levels of alcohol consumption or risky behaviours, e.g. driving in a drunken state.

Several studies have investigated the effect of consuming alcohol and energy drinks together but results have been mixed, although the current evidence indicates that single doses of caffeine are not likely to mask the feeling of intoxication in people drinking alcohol. It is still advisory if consuming energy drinks with alcohol, to be particularly aware of the number of alcoholic drinks consumed and the 'wide awake drunk' effect. This recommended limits of caffeine intake stated above is not likely to pose any safety concerns when consumed in combination with blood alcohol levels (BAC) of 0.08% (above the level which you are considered unfit to drive in most EU countries).

Is it safe to drink energy drinks before doing exercise?

Drinking up to 200 mg of caffeine (equivalent to the amount of caffeine in 2.5 standard cans of energy drink) less than two hours before performing intense physical exercise does not pose a safety concern for healthy adults under normal circumstances. There are no studies available on pregnant women or middle-aged/elderly adults consuming caffeine before exercise

Should I be concerned about drinking energy drinks?

Energy drinks are safe to drink by the healthy adult population. Due to their caffeine and high sugar content, energy drink consumption should remain moderate in the context of a healthy diet and lifestyle.

Useful sources of information

[Caffeine and Health](#)

[EFSA opinion on the safety of caffeine](#)

[EFSA explains caffeine](#)

[Regulation EC N° 1924/2006 of the European Parliament and of the Council on nutrition and health claims made on foods](#)

[International Food Information Council \(IFIC\) \(2011\). Questions and Answers About Energy Drinks and Health](#)

[Committee on toxicity of chemicals in food, consumer products and the environment \(2012\). COT statement on the interaction of caffeine and alcohol and their combined effects on health and behaviour: Lay summary.](#)

[Food Standards Agency website, High caffeine 'energy' drinks and other foods containing caffeine.](#)