

Energy Drinks

Bullet shapes, funky graphics and edgy names; energy drinks are creating quite the buzz as an increasingly popular choice with young people, and a rising concern with teachers, parents, and health care providers. Widely available and easy to access, a growing number of children and teens are consuming energy drinks. They are both the target market of manufacturers, and the group most at risk¹.

The information below presents facts on energy drinks, their use, their adverse health effects, and alternatives. It is intended to provide the background to support teachable moments, and enable students to make more informed choices that affect their health and well-being.

What are they?

Energy drinks are carbonated beverages that claim to give you a boost of energy and temporarily make you more alert with their combination of caffeine and other herbal ingredients. They are marketed explicitly at young people, through the use of non-traditional media such as extreme sports sponsorships, promotional events, and popular youth internet sites (*MySpace*TM, *YouTube*TM, *Facebook*TM)^{1,2}.

What do energy drinks contain?

Caffeine, guarana, taurine, ginseng and sugar are among the most common ingredients in energy drinks. Together, they are claimed to provide an energy boost to the consumer³.

Here's a closer look:

Caffeine is a legal drug and stimulant found in a variety of plants around the world. It stimulates (or "speeds up") the brain and nervous system, and gives a perceived feeling of more energy. It is the

ingredient most attributed to the "energy" boost in energy drinks, and its health effects are well documented^{3,4}. There is about 160mg of caffeine in a 16 ounce energy drink while a medium Tim Hortons coffee contains about 100mg, and a can of Coca Cola contains 35mg^{5,6}.

Guarana is a plant that grows in South America. It is also a stimulant and contains gauranine which is the same thing as caffeine. The amount of caffeine (guaranine) in guarana is approximately 4-8%^{2,7}. Almost all energy drinks do not include the caffeine from guarana when they list the total grams of caffeine per serving^{2,4}. For example:

16oz can of Rockstar®

On Label: 160mg caffeine & 400mg guarana
per can

Actual caffeine = 176 – 192mg

= 160mg + (400 x 4 – 8%)

= 160mg + 16 – 32mg

Taurine is an amino acid that the body needs to build protein. It is both consumed from animal based foods, and made in the body. Energy drinks claim that it can give you more energy and make you more alert, but there is no evidence to date that supports this. The long-term effects of taurine from energy drinks consumed on a regular basis are not known^{2,3,8}.

Ginseng is an herb and stimulant often added to energy drinks to boost energy, but the amount that is added to one can is below the levels established in medicine to have any health benefits. Just like taurine, ginseng is unlikely to boost energy levels, and more research is needed to know the long-term effects it might have^{2,3}.

Sugar, like caffeine, contributes to boosting “energy”, but in the form of calories. Aside from sugar-free versions, there is about the same amount of sugar in one 8-ounce (240ml) can of energy drink as there is in pop^{4,5}. Research has shown that sugar-sweetened drinks such as energy drinks, pop and juice with added sugar, are a contributing factor to obesity^{9,10}. Also of concern with young people is that they can displace more nutritious drinks such as milk.

Are they harmful?

The greatest concern with young people consuming energy drinks is the high level of caffeine. While moderate use for adults is generally safe, children and young teens have significantly lower tolerances for caffeine. Health Canada recommends that children 10-12 years old consume no more than 85mg per day, compared with 400mg a day for healthy adults. In the case of adolescents, caffeine has been linked to elevated blood pressure and other health effects such as addiction and withdrawal symptoms^{1,2,11}. Almost all energy drinks contain 80mg or more, with some containing more than 300mg in one can or bottle⁵ (i.e. Nos[®] energy drink).

Too much caffeine can cause^{2,3}:

- Insomnia
- Nervousness
- Headaches
- Stomach upset
- Restlessness
- Tremors
- Anxiety
- Increased blood pressure
- Fast, irregular heart beat (tachycardia)

In addition to negative health effects, children who use energy drinks regularly may experience caffeine withdrawal (adults experience this too). This occurs 12 hours after drinking a caffeinated beverage with symptoms including fatigue, lowered alertness, irritability, headaches, difficulty concentrating and restlessness. These physical symptoms usually go away shortly after a caffeinated beverage is consumed, which might mean reaching for another energy drink to “reboost”^{1,3}. A few severe cases of caffeine overdose and caffeine intoxication have been reported on youth who have consumed excessive amounts of energy drinks¹.

The health effects of the other ingredients such as taurine and ginseng are uncertain, and further research is required in order to know their long-term effects especially when consuming energy drinks on a regular basis. Further research is also needed to determine whether these ingredients interact and have further health effects when taken in combination³.

A 12-oz can of cola (35 mg of caffeine), an 8-oz energy drink (80 mg) and a solid milk chocolate bar (10 mg); it is easy for a 12 year old to reach their 85mg caffeine limit!

Marketing Influences

Energy drinks are a worldwide, multi-billion dollar industry¹². Age 12 to 18 is the largest consumer group regularly consuming energy drinks next to young adults. These numbers have increased dramatically over the past four years and are continuing to grow^{1,12}. It is legal for children to buy them, and easy to find in almost every grocery store, convenience store and gas station.

Age	Caffeine Limits (mg/day)	Soft Drink	Caffeine (mg)*
4-6 yrs	45	Coca-cola [®]	34
7-9 yrs	62.5	Drip Coffee (250ml)	115-175
10-12 yrs	85	Red Bull [®]	80
12-18 yrs	Guideline ≤100	Rockstar [®] & Monster Energy [®]	160
Adults	400-450	Nos [®] (650ml bottle)	343

*Does not include caffeine from other ingredients such as guarana and yerba mate

“CAUTIONS: Contains caffeine. Not recommended for children, pregnant or breast feeding women, caffeine sensitive persons or to be mixed with alcohol.”

-Energy Drink Labels

Manufacturers of energy drinks print caution labels on the energy drink containers that state “not recommended for children”, “recommended use: adults” but they contradict these cautions by advertising directly to youth. They use aggressive and innovative marketing techniques that appeal to the adolescent desire for rebellion and risk taking; branding dramatic names (i.e. Red Bull®, DareDevil®, Rip It®, Monster Assault®, Rockstar®), printing edgy graphics on containers, promoting events and sponsoring extreme sports¹.

A word on sports and energy drinks

Despite the marketing messages and extreme sport/athlete sponsorships, energy drinks are not a good choice for exercise. The high sugar content can interfere with absorption and/or cause stomach upset, and the carbonation of energy drinks makes it difficult to drink enough to stay hydrated; both contribute to the risk of dehydration which can hinder performance^{8,13}. When it comes to staying fuelled-up for sports, water and sports drinks are best⁸.

Energy Shots

A new beverage category has emerged from energy drinks: energy shots. They contain the same basic mix of herbs + caffeine as energy drinks, only they have less fluid¹⁴.

What can teachers do?

- Role model healthy drink choices in the classroom.
- Encourage students to choose more nutritious drinks and to get their energy instead from a healthy balanced diet and rest (energy drinks have no nutritional value).
- Highlight how energy drinks contain high levels of caffeine and what can happen when too much caffeine is consumed.
- Discuss how energy drinks contain other ingredients that we do not know the long term effects of.
- Discuss how advertisements portray them, and how they compare with the facts.
- Encourage students to choose healthier drinks such as milk, 100% fruit juice and water
- Advise against consuming energy drinks, particularly during exercise. Emphasize that water and sports drinks are the best choices!
- Provide only healthy drink choices at school such as 100% fruit juice, water and milk.

For more information & resources, contact:

The Health Promotion Unit at (867) 667-8978, or visit www.hss.gov.yk.ca/programs/health_promotion

This resource was developed in partnership with Alcohol and Drug Services. For more information on the effects of caffeine and other drugs on youth, contact Prevention Services at 667-5890.



References

1. Simon, M., & Mosher, J. (2007). *Alcohol, Energy Drinks, and Youth: A Dangerous Mix*. Retrieved November 10, 2009, from <http://www.marininstitute.org/alcopops/resources/EnergyDrinkReport.pdf>
2. Babu, K. M., Church, R. J., & Lewander, W. (2008). *Energy Drinks: The New Eye-Opener for Adolescents*. Retrieved November 10, 2009, from http://emergency.med.ufl.edu/med_students/peds_rotation/reading_assignment/energy%20drinks.pdf
3. Clauson, K. A., Shields, K. M. McQueen, C. E., & Persad, N. (2008). *Safety Issues Associated With Commercially Available Energy Drinks*. Retrieved November 10, 2009, from http://www.pharmacytoday.org/assets/pdf/May_CE_exam.pdf
4. Heneman, K., & Zidenberg-Cherr, S. (2007). Nutrition and Health Info-Sheet: Energy Drinks. Retrieved November 10, 2009, from <http://ucanr.org/freepubs/docs/8265.pdf>
5. Center for Science in the Public Interest. (2007). *Caffeine Content of Food & Drugs*. Retrieved November 10, 2009, from <http://www.cspinet.org/new/cafchart.htm>
6. Tim Hortons Research and Development. (2008). *Tim Hortons® Caffeine Content*. Retrieved November 10, 2009, from <http://www.timhortons.com/ca/pdf/caffeine-canada-en.pdf>
7. Anonymous. (2009). *Guarana*. Retrieved November 10, 2009, from <http://en.wikipedia.org/wiki/Guarana>
8. Dietitians of Canada. (2009). *Energy Drinks – What you need to know*. Retrieved November 10, 2009, from [http://www.dietitians.ca/resources/resourcesearch.asp?fn=view&contentid=5799&resource_resourcetype=FAQ\(Frequently%20asked%20question\)%20&resource_language=English](http://www.dietitians.ca/resources/resourcesearch.asp?fn=view&contentid=5799&resource_resourcetype=FAQ(Frequently%20asked%20question)%20&resource_language=English)
9. Ludwig, D. S. et al. (2001). *Relation between consumption of sugar-sweetened drinks and childhood obesity: a prospective, observational analysis*. Retrieved November 10, 2009, from [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(00\)04041-1/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(00)04041-1/fulltext)
10. Flynn, M. A. et Al. (2006). *Reducing obesity and related chronic disease risk in children and youth: a synthesis of evidence with 'best practice' recommendations*. Retrieved November 10, 2009, from <http://www.ncbi.nlm.nih.gov/pubmed/16371076>
11. Savoca, M. R., MacKey, M. L., Evans, C. D., Wilson, M., Ludwig, D. A., & Harshfield, G. A. (2004). Retrieved November 10, 2009, from <http://www.nature.com/ajh/journal/v18/n1/abs/ajh200517a.html>
12. Mintel. (2008). *Mintel Press Release: Energy drink explosion hits food*. Retrieved November 12, 2009, from <http://www.mintel.com/press-release/Energy-drink-explosion-hits-food?id=268>
13. Casa, D.J., Clarkson, P.M., Roberts, W.O. (2005). *American College of Sports Medicine Roundtable on Hydration and Physical Activity: Consensus Statements*. Retrieved November 12, 2009, from http://www.acsm.org/AM/Template.cfm?Section=Past_Roundtables&Template=/CM/ContentDisplay.cfm&ContentID=2729
14. Klineman, J. (2008). *Little competition: energy shots aim for big profits*. Retrieved November 12, 2009, from http://www.beveragespectrum.com/issue/April2008/april_cover_energy_shots