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The surge of energy drinks: Trends, benefits and health implications

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Abstract

The firmest budding product in the liquid refreshment industry is Energy Drinks (EDs) which contains caffeine mainly. It is generally marketed as cerebral stimulation drink as it helps in boosting energy and lifting mood. Its target market is school and college going individuals along with athletes as it improves reaction time and athletic performance. Its main ingredients are caffeine, guarana, gluconolactone, taurine, ginseng, carnitine, B-complex vitamins and sugar. Red Bull alone held 43% of the worldwide arcade in 2014, which resulted in 4.2% increase in sales over 2013. EDs have many pros and cons. The major health hazards being anxiety, over excitation, dehydration, oral problems, hypoglycaemia, dizziness, calcium imbalance, infertility etc. Food grade labels should be introduced in the country just like Singapore which would automatically let the individual think about its intake.

Keywords: Beverage, energy drinks, caffeine, consumption, labels

Introduction

An energy drink (ED) is a particular kind of beverage that typically contains caffeine and is marketed as offering both physical and cerebral stimulation (marketed as "energy", but separate from food energy). Among many other potential ingredients, they might include sugar, other sweeteners, or herbal extracts, and they might or might not be carbonated.

EDs became a new class of beverage in the recent past in United States of America.in 1997 it came to limelight as a prominent part of partying subculture notably among the adolescents.

These beverages have gained popularity as health drinks among a wide range of demographics, including athletes and college-bound students. ED also known as non-alcoholic functional beverages, are mostly composed of stimulants such as caffeine, guarana, glucuronolactone, taurine, ginseng, inositol, carnitine, and B-complex vitamins (riboflavin, niacin, B5, B6, B12, etc.). While they are touted for their powerful ability to increase alertness and provide an energy boost, they do not contain sources of rehydration or electrolyte restoration relevant to the physical activity.

A beverage with high sugar and caffeine content that is promoted as stimulant of brain and body is called an energy drink. This is alarming as compared to soft drinks, energy drinks' high sugar content directly causes an increase in obesity, type 2 diabetes, cardio vascular diseases and dental erosion. Since caffeine is an addictive stimulant, adding it to these drinks creates additional problems such as nervousness, irritability, insomnia and even arrhythmia (an irregular heartbeat) are major effects linked to excessive caffeine intake. Wittingly or unwittingly, the strategies of monster ED companies copy the campaigns of big tobacco companies to target children and adolescents leading to established brand loyalty at an earlier stage. By associating EDs with extreme sports and sportsperson in advertisement industry, these products are positioned directly in front of young males which in part explain why sales of energy drinks continue to increase against the general decline of soft drink consumption.

The effects of sugar and caffeine are evident in energy drinks, but the effects of the many other chemicals are either negligible or non-existent.

Since Red Bull, the current market leader, made its debut in 1997, the popularity of energy drinks has continued to rise. Despite the fact that energy drinks are marketed to young adults, not much is known about how often students consume these drinks.

The aim of this paper is to ascertain student's patterns of energy drink consumption, as well as the prevalence and frequency of use. To make the population aware about its association with various health ailments such as hypertension; lipid metabolism; weight loss and gain; increase or decrease in appetite; lipid metabolism etc. Lack of sleep, general energy boost, studying, long-distance driving, drinking alcohol while partying etc. are some of the common uses of ED`s that have been observed. Energy boost and show off tops the list.

Composition of any beverage depends totally upon the base material being used for its preparation. Availability of EDs depends upon the materials used. Two vital EDs available in the market are fruit and non- fruit based. Amp ED is the most common fruit based drink whereas Red Bull, full Throttle ED are non- fruit based ED.

Table 1: General Configuration of EDs

Nutrient	Range	
	Non Fruit based ED	**Fruit Based ED**
Calories	105-144 kcal	110 kcal
Caffeine	70-80mg	71mg
Sugar	27-31mg	29mg
Taurine	1000mg	ND
Glucoronolactone	600mg	-
Ginseng/ Gaurana Extract	May or may not be present	Present

***Source*:** Rosenbloom 2014 [17]

Consumption Trends

EDs have gained massive popularity after Red Bull came into the global market. In 2006, there was 17% increase in the consumption of ED. Red Bull alone held 43% of the worldwide market in 2014-2016. The countries with the highest sales growth rates were Turkey (+33%), Russia (+18%), Japan (+11%), and India (+32%) in 2013-2014.

This market is projected to expand due to growing need for energy and sports drink in sectors such as healthcare, consumer goods and manufacturing. North America is the leading market in beverage industry due to significant investments in technology and innovation. The Global Energy and Sports Drink marketplace is expected to touch 17.5 billion by 2031 developing at a Compound Annual Growth Rate (CAGR) of 14.41% on or after 2024-2031 while CAGR was 7.5% from 2020 to 2024. The Asia Pacific Region is anticipated to experience highest boom due to urbanization, increasing consumer demand. Major troupes in the arcade comprise Monster, Red Bull, PepsiCo, Gatorade plus Rockstar energy.

Pros and Cons of ED

The tendency of Energy Drinks usage has increased due to aggressive marketing and advancements in socio-economic position. These beverages have a lot of health advantages, such as improved concentration and long-term attention (Scholey *et al*., 2004; Anitei *et al*., 2011; Guilbeau, 2012; Yamakoshi *et al*., 2013) [21, 2, 13, 23]. As a result, they have a big impact on how people behave. In addition to its many health advantages, there are a number of health hazards related to its intake, including anxiety, over excitation, and dehydration. Teeth problem (Breda *et al*., 2014) [10]; calcium imbalance; hypoglycaemia; dizziness *(*Akinmolusun *et al*., 2012) [1]; obesity etc.

Guarana, glucoronolactone, ginseng, and other ingredients have beneficial effects that include anti-fatigue, anti-depressant, ergogenic, and fat-burning actions. They also improve the body's natural defence mechanism, stress resistance, and general job efficiency. According to Costantino *et al*., Korean red ginseng is widely known to boost human immune system, enhance remembrance, improve blood flow etc. Sugar being the major source of energy in ED. Vitamin B_1 i.e. thiamine and B_2 i.e. riboflavin serves as a co-factor in carbohydrate metabolism to produce energy. They are necessary for the body to function appropriately. Vitamin B3 produces energy from lipids, carbohydrates and starches. B_3 also stimulates the production of certain neuro-transmitters such as dopamine, serotonin and norepinephrine. Fatty acid oxidation is a function of vitamin B5. Consuming caffeine on a daily basis lowers the risk of neurodegenerative ailments including Parkinson's, dementia and Alzheimer's (Jiang *et al*., 2023) [15].

Besides being such benefits one cannot ignore the darker side of EDs. Over consumption of ginseng may lead to elevated blood pressure, insomnia, nervousness, skin eruptions, vomiting, diarrhoea along with vaginal bleeding and cerebral arteritis. Guarana causes low birth weight accompanied by angina, anxiety, tremors, tachycardia, mutagenic effects, stomach upset. It may also upset platelet aggregation. Over indulgence of carnitine may cause gastrointestinal (GI) issues such as nausea, diarrhoea, vomiting, abdominal pain. Over consumption of sugar is also linked to higher risk of obesity and insulin resistance leading to diabetes. Taurine has been shown to worsen hypoglycaemia. Basically, many researchers are still figuring out the way either to decrease its consumption in the target group or to enhance its nutritional quality.

Consumption Policies

Excess consumption of EDs is linked to serious health ailments as discussed earlier. In order to put an end to all the cases different regulatory bodies have been set up in order to regulate labelling, distribution and sale of EDs containing caffeine more than the allowed quality. The US food and Drug Administration (FDA) regulates the amount of caffeine in soft drinks, however the US code of federal regulation state that EDs are safe. Whereas Food Safety and Standards Authority of India (FSSAI), it is necessary to state "high caffeine content" on the labels of beverages that contain caffeine more than 150mg/kg.

As per Ajibo 2024, countries like Lithuania and Latvia have banned the sale of EDs for youngsters less than 18 years of age in 2014 and 2016 respectively. Manufacturers selling ED are required by Australian and Canadian regulations to list the caffeine content on the product label. The maximum recommended daily intake of caffeine in Australia is 160 mg, and beverages containing more than 320 parts per million of caffeine are prohibited (Peacock *et al*., 2013) [16]. The amount of caffeine added to EDs is governed by the Australia New Zealand Food Standards Code's Standards 1.3.1 (Food Additives) and 2.6.4 (Formulated Caffeinated Beverages), which state that caffeinated beverages, including EDs, shall have a total caffeine content of 145 to 320 mg/l. It is acclaimed to limit the regular caffeine intake to not more than 400 mg/day and 200 mg/day for healthy adults and pregnant women correspondingly. Countries like Denmark, Turkey and Uruguay, France and Iceland; EDs have been debarred owing to its vigorous complexities (Rostami *et al*., 2024) [18].

Hence, with the demand of time it is of utmost importance to thoroughly formulate laws regarding the amount of ingredients added as well as address the various risk factors associated with it. Applicable cataloguing should also be enforced globally leading to easier consumption choices. Manufacturers should willingly state proper nutrition labels that are easy to understand. The findings underline the need for stricter regulations by governing agencies.

References

1. Akinmolusun O, Bezabih Y, Kaunissaari S, Mugambi A. Detrimental effects of energy drink consumption on adolescents. 2012.
2. Aniței M, Schuhfried G, Chraif M. The influence of energy drinks and caffeine on time reaction and cognitive processes in young Romanian students. Procedia Soc Behav Sci. 2011;30:662-670.
3. Anonymous. Energy drinks. HealthLinkBC. 2015;(109). https://www.healthlinkbc.ca/hlbc/files/documents/healthfiles/hfile109.pdf
4. Anonymous. Caffeine. 2012. https://foodsafety.govt.nz/elibrary/industry/caffein-info-sheet.pdf
5. Aranda M, Morlock G. Simultaneous determination of riboflavin, pyridoxine, nicotinamide, caffeine and taurine in energy drinks by planar chromatography-multiple detection with confirmation by electrospray ionization mass spectrometry. J Chromatogr A. 2006;1131:253-260.
6. Babu KM, Church RJ, Lewander W. Energy drinks: the new eye-opener for adolescents. Clin Pediatr Emerg Med. 2008;9(1):35-42.
7. Baribeau H. The harmful effects of caffeine on health. 2014.https://www.caflib.com/en/images/harmful-effects-of%20caffeine.pdf
8. Bawazeer NA, AlSobahi NA. Prevalence and side effects of energy drink consumption among medical students at Umm Al-Qura University, Saudi Arabia. Int J Med Stud. 2013;1(3):104-108.
9. Bedi N, Dewan P, Gupta P. Energy drinks: potions of illusion. Indian Pediatr. 2014;51(7):529-533.
10. Breda JJ, Whiting SH, Encarnação R, Norberg S, Jones R, Reinap M, *et al*. Energy drink consumption in Europe: a review of the risks, adverse health effects, and policy options to respond. Front Public Health. 2014;2:134. doi:10.3389/fpubh.2014.00134
11. Childs E. Influence of energy drink ingredients on mood and cognitive performance. Nutr Rev. 2014;72(Suppl 1):48-59.
12. Costantino A, Maiese A, Lazzari J, Casula C, Turillazzi E, Frati P, *et al*. The dark side of energy drinks: a comprehensive review of their impact on the human body. Nutrients. 2023;15(18):3922.
13. Guilbeau JR. Health risks of energy drinks: what nurses and consumers need to know. Nurs Womens Health. 2012;16(5):423-428.
14. Higgins JP, Tuttle TD, Higgins CL. Energy beverages: content and safety. Mayo Clin Proc. 2010;85(11):1033-1041.
15. Jiang N, Ma J, Wang Q, Xu Y, Wei B. Tea intake or consumption and the risk of dementia: a meta-analysis of prospective cohort studies. PeerJ. 2023;11:e15688.
16. Peacock A, Bruno R, Martin FH. Patterns of use and motivations for consuming alcohol mixed with energy drinks. Psychol Addict Behav. 2013;27(1):202-206.
17. Rosenbloom C. Energy drinks, caffeine, and athletes. Nutr Today. 2014;49(1):49-54.
18. Rostami M, Babashahi M, Ramezani S, Dastgerdizad H. A scoping review of policies related to reducing energy drink consumption in children. BMC Public Health. 2024;24(1):2308.
19. Rotstein J, Barber J, Strowbridge C, Hayward S, Huang R, Godefroy SB. Energy drinks: an assessment of the potential health risks in the Canadian context. Int Food Risk Anal J. 2013;3(1):01-29.
20. Sadasivam S, Manickam AC. Biochemical methods. New Delhi: New Age International Ltd; 1991.
21. Scholey AB, Kennedy DO. Cognitive and physiological effects of an “energy drink”: an evaluation of the whole drink and of glucose, caffeine and herbal flavouring fractions. Psychopharmacology. 2004;176(3-4):320-330.
22. Woolsey CL, Jacobson BH, Williams RD Jr, Barry AE, Davidson RT, Evans MW Jr, *et al*. A comparison of the combined-use of alcohol & energy drinks to alcohol-only on high-risk drinking and driving behaviors. Subst Use Misuse. 2015;50(1):1-7.
23. Yamakoshi T, Matsumura K, Hanaki S, Rolfe P. Cardiovascular hemodynamic effects of Red Bull® Energy Drink during prolonged, simulated, monotonous driving. Springerplus. 2013;2:251.