Energy Drinks

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Introduction

- Energy drinks are

beverages marketed with a claim that they increase energy, alertness, attention, and improve sports performance and concentration time

of the consumer

- They gain popularity since the 1997

in the market there are more than 500 new energy drinks

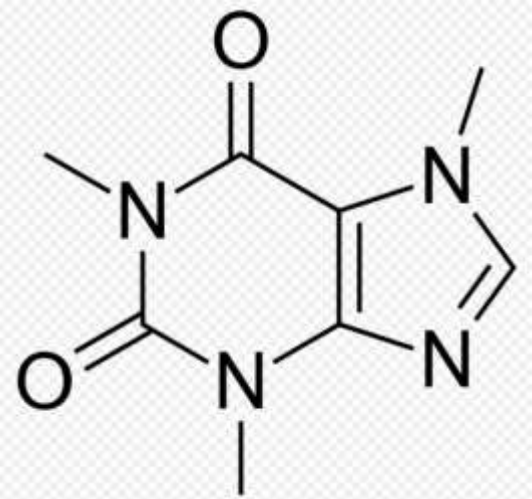
- In the United States, energy drinks are marketed as dietary supplements, limiting regulation of these products, and allowing easy access for children and adolescents
- In a study to gather consumption data for energy drinks in 16 countries of the European Union. They found that 68% of adolescents (aged 10–18 years old), 30% of adults, and 18% of children (<10 years old) consumed energy drinks

What are the major constituents?

- Energy drinks differ from soft or sport drinks in that they contain higher levels of **caffeine**.
- They usually contain 80-150 mg of caffeine per 8 ounces, the equivalent of five ounces of coffee or two 12- ounce cans of caffeinated soft drink such as Mountain Dew, Coca Cola, Pepsi Cola.
- In addition, they contain **artificial sweeteners or unhealthy sugar** for example, Monster Energy provides 24 grams of sugar per 8 ounces (12% sugar concentration).
- The carbohydrate sources, usually glucose and sucrose, found in the beverages supply the substrates needed for physiological energy, while the high caffeine content supplies the perceived energy through enhancing feelings of alertness during fatigued states.

Caffeine

- Caffeine is a central nervous system stimulant, structurally similar to the compound adenosine.
- Caffeine antagonizes signaling through adenosine receptors, and increases release of catecholamines leading to increased heart rate, blood pressure, blood glucose, and bronchodilation.



Caffeine

- Caffeine is a bitter, white crystalline purine, a methylxanthine alkaloid.
- It is found in the seeds, fruits, nuts, or leaves of a number of plants native to Africa, East Asia and South America.
- The best-known source of caffeine is the coffee bean, the seed of the Coffea plant.

Energy Drink Ingredients

The additional ingredients often included in energy drinks, typically including

1. Various B vitamins,
2. herbal supplements
3. Certain amino acids

- One herbal supplement commonly included in popular energy drinks is guarana, which is a tropical plant that contains highly caffeinated Seeds Therefore, any energy drinks that contain guarana likely have higher doses of caffeine, compared with those not containing guarana, Some studies have suggested that the caffeine content of guarana (40 mg per gram of extract) s not always declared in packaging and is additional to the listed caffeine content of energy drinks
- Hence, the caffeine dose may be higher than that listed on the beverage ingredients list. which is what provides the added enhancement in perceived energy

Why they are popular?

- Energy drinks are marketed on popular television channels and websites that are commonly viewed by adolescents and thus may encourage youth to consume energy drinks.
- They are advertised as increasing energy, improving athletic performance, concentration, reactions, wakefulness, attention, emotions and metabolism, and reducing physical and mental stress.
- Young adults and adolescents are particularly attracted to energy drinks because of effective product marketing, peer influence and a lack of knowledge of the potential harmful effects.

Do energy drinks provide the consumer an extra burst of energy as the advertisements would have you believe

- Yes, they do
- compared to placebo, had energizing effects among 18 to 55 year old participants, with effects being strongest 30 to 60 minutes after consumption and sustained at least 90minutes
- However, these effects are extremely variable, dose dependent, and health professionals are concerned about the adverse effects associated with these products Since most importantly, have not been well studied in children and adolescents.

Energy drinks versus Sport drinks

- EDs differ from sports drinks, which are marketed to accompany physical activity and contain carbohydrates, minerals, electrolytes and flavoring, and are intended to replenish water and electrolytes lost through sweating during exercise.

Safe limits

- Safe limits of caffeine consumption are still undetermined but data suggest that maximum recommended intake of caffeine per day varies from 2.5 mg/ kg/day to 6 mg/kg/day in children, 100 mg/day in adolescents and up to 400 mg/day in adults
- In some cans or bottles of EDs the total amount of caffeine can exceed 500 mg (equivalent to 14 cans of common caffeinated soft drinks) and is high enough to result in caffeine toxicity.

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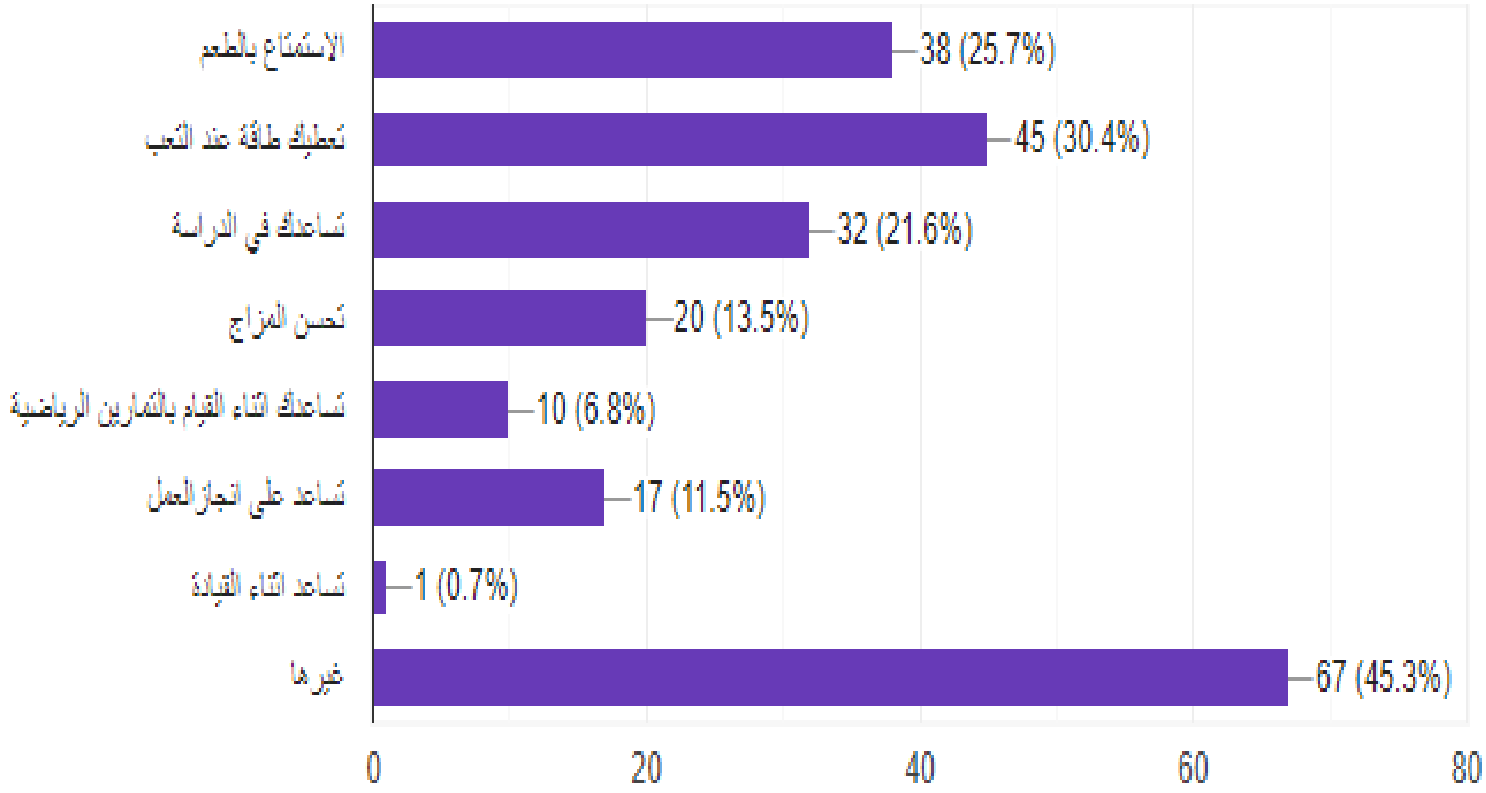
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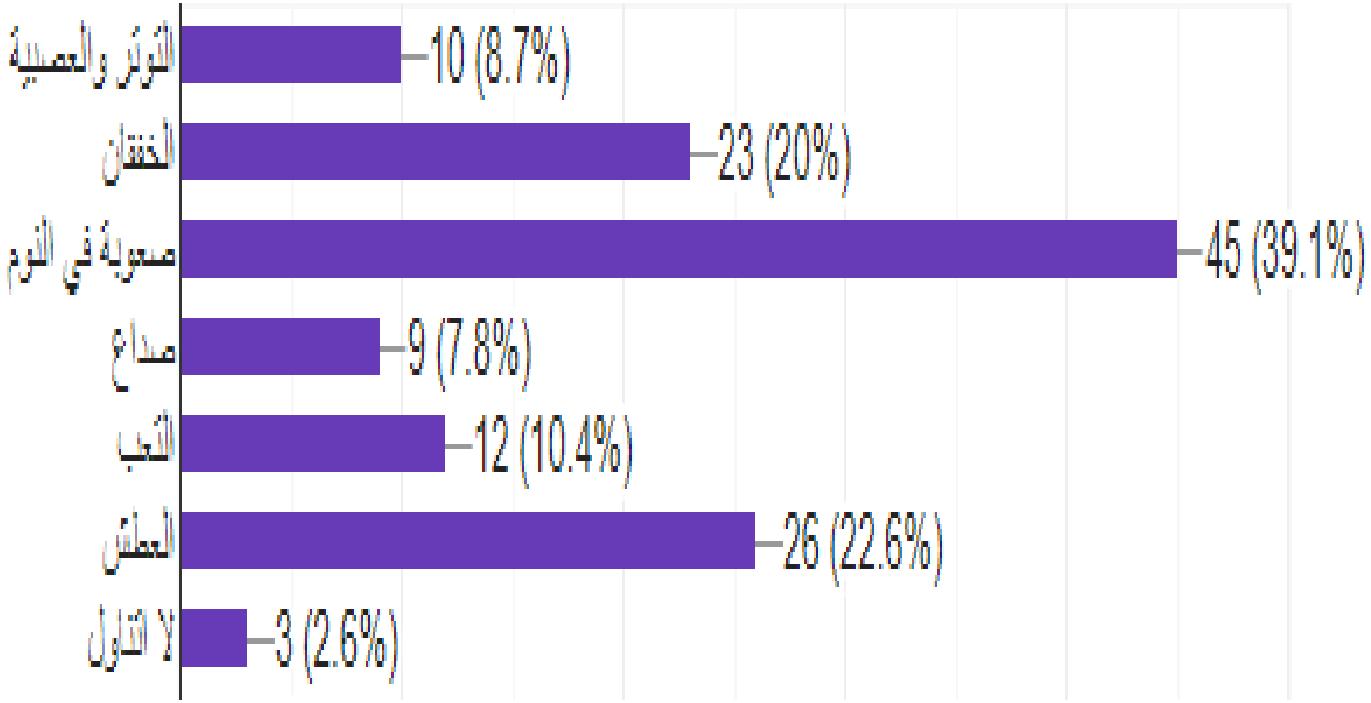
تعطيك طاقة عند التعب
تساعدك في الدراسة
تحسن المزاج
تساعدك اثناء القيام بالتمارين الرياضية
تساعد على انجاز العمل
تساعد اثناء القيادة
غيرها
38 (25.7%)
45 (30.4%)
32 (21.6%)
20 (13.5%)
10 (6.8%)
17 (11.5%)
1 (0.7%)
67 (45.3%)
0
20
40
60
80

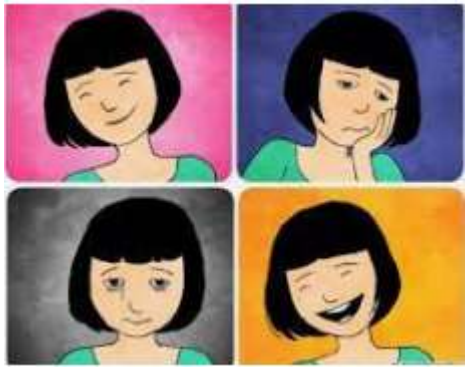
Google form


التوتر والعصبية
10 (8.7%)
الخفقان
23 (20%)
صعوبة في النوم
45 (39.1%)
صداع
9 (7.8%)
التعب
12 (10.4%)
العطش
26 (22.6%)
لا اتناول
3 (2.6%)

Adverse effects

- mild unfavorable adverse effects include insomnia, mood swings, nervousness, upset stomach, and headaches.





Health Risks

- Possible health problems have been documented, particularly amongst children and adolescents
- Caffeine in energy drinks promotes diuresis and natriuresis, this acute increase in urinary output may increase the risk of dehydration. (great concern while exercise)
- High caffeine consumption is associated with chronic daily headaches, Central nervous system, cardiovascular, gastrointestinal, and renal dysfunction have been associated with chronic caffeine ingestion.
- Caffeine can produce a mild form of drug dependence – associated with withdrawal symptoms such as sleepiness, headache, and irritability – when an individual stops using caffeine after repeated daily intake

Health Risks

- The high sugar content in caffeinated EDs is similar to other soft drinks and is known to contribute to obesity and insulin insensitivity.
- Other groups of children and adolescents at risk are those with eating disorders, children with obesity, as most energy drinks are rich in calories
- Alterations of dental enamel since most EDs have a pH in the acidic range (pH 3-4). This low pH is associated with enamel demineralization. Citric acid is frequently included in EDs and has been found to be highly erosive. Therefore, people should be instructed on the potential deleterious effects of such beverages when often consumed.
- Adolescents are in rapid growth phases, making energy drinks a potential limiting factor in bone acquisition and growth.

Health Risks

- On the other hand energy drinks have sugar-free versions that contain artificial sweeteners. Products including aspartame and saccharin have undergone extensive risk assessment by the FDA in relation to a number of potential safety concerns, including carcinogenicity and more recently, effects on body weight gain, glycemic control and effects on the gut microbiome

Health Risks

- Individuals on certain medications or those with chronic cardiovascular diseases are discouraged from consuming energy Drinks
- adolescents who frequently consume caffeinated beverages do not meet recommendations for sleep duration and commonly experience sleep disturbances.
- Disruption of the sleep cycle thus creates a false dependency on energy drinks to combat the resulting fatigue, particularly for youth who reported consuming energy drinks to counteract feelings of tiredness
- Studies have shown that adolescents who consume energy drinks are likely to also use tobacco, alcohol, and drugs
- In addition a strong correlation between caffeine intake and violent behavior.

Toxicity

- Caffeine intoxication may result in tachycardia, vomiting, cardiac arrhythmias, seizures, and even cardiac arrest and death.

Alternatives

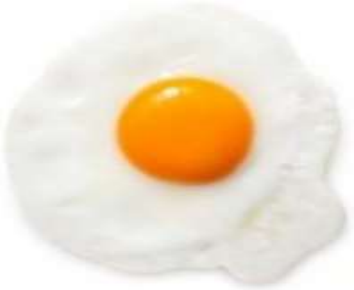
الشوكولاته الداكنة

القهوة

الموز

عسل النحل

الاسماك الاسطوانية



البيض

Recommendations

- Health care providers should educate youth and their parents about the risks of caffeinated drinks.
- Emergency department clinicians should consider asking patients about ED and traditional caffeine usage and substance use when assessing patient symptoms.
- Policy makers should increase their attention on introducing regulatory policies on television food advertising to which youth are exposed.
- Failure to comply with standards for efficacious product labeling, and absence of broader education regarding guidelines, need to be addressed
- Further studies must be done to improve our understanding of potential negative consequences of caffeinated energy drinks on health.

And

Thank you for listening