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ENERGY DRINKS ARE A BAD FUEL

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Summary:

Energy drinks have increased in popularity over the years, mostly among teenagers and young adults. Phil, a university student, wants to know more about energy drinks and whether their consumption is a good idea or not. Therefore, energy drinks were studied in terms of the validity of their claims on their packaging and their possible health implications, using PubMed and Google Scholar to retrieve information from peer-reviewed articles using different keywords, such as “energy drinks”, “health effects” and “claims”. Overall, most of the claims on the packaging of these caffeinated beverages were valid, since many studies showed that they indeed enhanced mental and physical performance. However, there were many possible health implications resulting from their consumption, such as respiratory disorders, agitation, seizures, psychotic conditions, hypertension, heart failure and death. Therefore, Phil should not consume energy drinks and should find a healthier alternative to get energy.

Introduction:

The energy drinks market has tremendously increased in sales in the last decade. Indeed, in 2014 the annual sales are estimated to be over \$110 million in Canada and the major consumers are teenagers and young adults (from approximately 18 to 34 years old). (Reid, McCrory, White, Martineau, Fenton, & Hammond, 2017) Most users buy these high caffeinated beverages to improve their concentration and performance mainly in sports. (Wassef, Kohasieh, & Makaryus, 2017) University students drink them in order to stay awake and focus for a long period of time while being sleep deprived. Moreover, their use is nowadays really common with alcohol. Actually, it is not unlikely that university students will mix alcohol and energy drink to avoid the depressant outcome of alcohol ingestion. However, one should not ignore the impact of these drinks consumption on their overall health. Indeed, Phil, a university student, wonders whether energy drinks are good or bad. To answer Phil, an investigation on what are energy drinks, the validity of claims on their cans and their possible health implications is necessary.

Material and Method:

To collect information I wanted to answer the following questions: what are the health impact of energy drinks, what are the benefits and the side effects of energy drinks consumption, and what are energy drinks. To answer these questions I researched on PubMed and Google Scholar to retrieve information from peer-reviewed articles using different keywords, such as “energy drinks”, “health effects” and “claims”, singly or in combination. Most of my information comes from experiments or surveys performed among different groups of people all around the world. I also looked for the effect of energy drink consumption mostly on teenagers and university students, since Phil is a university student. Plus, I made sure that all of my sources were recent (none of them is older than 2010). Moreover, I often confirmed the information of one source with another one which added to the credibility of my sources.

Result and discussion:

First of all, according to Seifert, Schaechter and Hershorin (2011), energy drinks are made of taurine, sugar and sweeteners, herbal supplement, a lot of caffeine and other legal stimulants, such as glucuronolactone, inositol, niacin, carbohydrates, panthenol and B-complex vitamins. (Attila & Cakir, 2011) Some common brands of energy drink are Red Bull, Burn, and Adrenaline Rush. The amount of caffeine in energy drinks is unregulated because usually, one serving of 8-oz may proclaim to contain up to 80 mg of caffeine and a 16-oz drink up to 500 mg of caffeine, but manufacturer add additives that also contain caffeine (for instance, guarana, an additive, can hold up to 80 mg of caffeine per gram) and they don't have to specify the caffeine content of these additives. Therefore the real amount of caffeine for one consumption is most likely to be superior to what it claims. Plus, since these beverages are considered to be nutritional supplement, the producer is not required to follow the caffeine limit enforce on other caffeinated drinks on the market such as sodas, and don't have to undergo the safety testing and labeling demanded for pharmaceuticals products. (Seifert et al., 2011).

The common claims on an energy drink are that it improves performance in sport, stamina, concentration, gives energy and contributes to weight loss (Seifert et al., 2011). Indeed, Peveler, Sanders, Marczinski, & Holmer (2017) revealed that 73% of university student-athletes claim to consume energy drinks to boost their performance. However, the caffeine found in energy drinks has diuretic properties. Plus, when an athlete perform a sport, it usually sweats. Therefore, the lost of fluid caused by sweat combined to the diuretic properties can be harmful for the consumer which will be subject to serious dehydration.(Attila,& Cakir, 2011) In other words, yes, energy drink may enhance performance but it may also cause you harm. Furthermore, in some studies, energy drinks have indeed showed to be useful to improve concentration and alertness, since the caffeine and glucose, contained in these beverages, combined together improve cognitive performance and combat fatigue.(Attila & Cakir, 2011) Next, some people might believe that energy drinks contribute to weight loss but it is not a miracle fix. It might actually be the diuretic effect of caffeine that contribute to the weight loss. In other words, the weight loss might be due to the loss of water in the body and not due to fat loss. Plus, a sugary and caffeinated drink may let you believe that you are full, consequently would suppress your appetite, but it is surely not a healthy way to lose weight (since a lot of essential nutrients would be needed due to your inability to provide them with a good meal). Finally, some ingredients found in energy drinks might have therapeutic benefits when ingested in sufficient quantity and individually. However, it has been shown that the amount of these natural product are too low to provides these benefits in energy drinks. (Attila & Cakir, 2011) For instance, ginseng is assumed to enhance memory, stamina and activate immune function, however the amount found in energy drinks is so small that it does not provide these therapeutic benefits.(Seifert et al., 2011) Similarly, Wassef et al. (2017) explained that the ingredients found in energy drinks, except for caffeine, have not been studied enough to confirm their role in the enhancement of mental and physical performance and their safety for the cardiovascular system.

In conclusion, the claims on the can are technically valid, but they hide a lot of harmful side effects.

Energy drinks are stimulants that increase heart rate and blood pressure, dehydrate the body and inhibit sleep. (Attila & Cakir, 2011) Mixed with alcohol, energy drinks can cause even more harm due to the stimulant characteristic of energy drinks combined with the depressant characteristic of alcohol. Indeed, the stimulant aspect will cover the level of intoxication (of alcohol) of an individual and therefore the individual (or its friends) won't realize how intoxicated he/she is and might drink more. As a result, when the stimulant effect disappears, it will be replaced by all of the depressant effect of alcohol and the person may undergo a wide range of side effects such as vomiting and hypoventilation. Furthermore, both alcohol and energy drink are dehydrating, so combined together, they will slow down the capacity of the body to metabolize alcohol and, consequently, rise the toxicity of alcohol. (Attila & Cakir, 2011) In addition, energy drinks are linked to many cardiac death and myocardial dysfunction which, as a consequence, reveals that they enhance platelet aggregation and decrease endothelial function (two properties associated with myocardial infarction). (Worthley, Prabhu, DE Sciscio, Schultz, Sanders, & Wiloughby, 2010) Another study revealed that two-third of energy drinks consumers had a hard time to fall asleep, one-third experienced anxiety, nervousness and thirst, one-fifth experienced tiredness and headaches, while some reported heart palpitation and increase in blood pressure. (Dwaidy, Dwaidy, Hasan, Kardry, & Balusamy, 2018) There are many other possible health outcomes, such as "liver damages, kidney failure, respiratory disorders, agitation, seizures psychotic conditions, rhabdomyolysis, tachycardia, cardiac dysrhythmias, hypertension, heart failure and death". (Seifert et al., 2011, p.517) In fact, in 2011, 58% of visit in an emergency room were caused only by the consumption of energy drinks (Peveler et al., 2017)

Conclusion:

In conclusion, energy drinks are beverages made with an high dose of caffeine and even if it has been proved to improve stamina, mental and physical performance, weight loss and give energy, it is not the only nor the best option due to the numerous possible negative health outcomes. Therefore Phil, a university student should not consume energy drinks and should find healthier alternative to get energy, such as eating food to ingest calories and getting a good night of sleep. However if he does decide drink some, it should be rarely and he should never mix them with alcohol.