

STUDY OF BENEFICIAL AND ADVERSE HEALTH EFFECTS OF ENERGY DRINK

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ABSTRACT :- Consumption of energy drinks has increased significantly over the past two years, especially among teenagers and young adults. Energy drinks are marketed with a lot of hype, claiming that the product increases energy and improves body and intelligence. However, research to support these claims is limited. In fact, some health problems have been associated with energy drinks; this raises the question of whether these drinks are safe. This review was undertaken to identify and discuss publications examining both the beneficial and adverse health effects of drinking water. Although drinking energy drinks may be beneficial for physical activity, it has been concluded that these products are also beneficial for health. The sale of drinking water, especially to young people, should be restricted or restricted until independent research confirms its safety.

KEYWORDS:- Cognitive, Detrimental, Adolescents.

INTRODUCTION:-

Energy drinks, with or without other nutritional supplements, are generally in the category of liquid products containing caffeine. The first energy drink appeared in the United States in 1949 and was called "Dr. Enough". It first started in Europe in 1987. The business later expanded worldwide and became very popular after launching Red Bull in 1997. Since then, the beverage industry has grown exponentially with many brands emerging all over the world. Annual energy drink consumption in 160 countries exceeded 5.8 billion liters in 2013. The US energy drink market, which grew 56 percent from 2006 to 2002, is estimated to be worth approximately \$12.5 billion in 2012. Manufacturers have recently shifted their customer focus from athletes to youth. Energy drinks are marketed to youth and youth nearly two-thirds of those who drink alcohol are between the ages of 13 and 35, and two-thirds of those who do business are boys. In the United States, energy drinks are the second most common dietary supplement used by

young adults. About 30% of people drink alcohol regularly. The popularity of energy drinks in Saudi Arabia seems to be no different from the rest of the world. About half of Saudi university students surveyed said they regularly use energy. Energy Drinks aim to provide drinkers with an "energy boost" through combination of stimulants and energy boosters. The main ingredient in most energy drinks is caffeine. They usually contain 80-150mg of caffeine per 8oz. Most brands on the market contain more dextrose, but some offer sweetened condensed milk. Including Taurine, Methylxanthines, B vitamins, Ginseng, Guarana, Yerba Mate, Acai Berry, Maltodextrin, Inositol, Carnitine, Creatine, Glucuronolactone and Ginkgo Biloba. Serious concerns have been raised regarding the safety of this product. There are some reports that energy drinks are harmful to health. But drinkers say the product is convenient and safe for consumers. In fact, the negative health effects of energy drinks are a concern among scientists.

OBJECTIVE OF STUDY:-

Beverage ingredients and health benefits and risks. Energy drinks are a group of beverages used by consumers to provide extra energy, increase energy, maintain speed, and improve cognition and emotions.

REVIEW OF LITERATURE:-

Secondary source have being used to study the composition of energy drink. The need of the present era is to develop nutritious and economical ED which would prove to be safe for human consumption as well. Popularly marketed as effective products that increase energy, enhance mental alertness and physical performance (National Center for Complementary and Integrative Health, 2022), the targeted consumers of energy drinks initially were athletes, but the marketing companies have now shifted their target consumers to not only athletes but to the general population of which only children are excluded (Alsunni, 2015). It has

however been indicated by Visram, et al., (2016) that energy drink consumption among children is alarming considering the range of health risks that energy drinks have on the health of children. Nuss, et al., (2021), espoused that the promotion of energy drinks is often directed to adolescents, and no person, irrespective of age, is restricted from buying energy drinks in Australia. According to John, et al., (2018), People from diverse social and economic backgrounds including students, office workers, athletes, weekend warriors, and service members have become frequent consumers of energy drinks. Wondering how energy drink consumption is popular among teenagers and young adults is the result of the aggressive marketing culture in areas where these groups of the population live (Alsunni 2015). Evidence to this claim is what was reported by the Mintel Energy Drink Report of 2012 (as cited in Alsunni, 2015), where it was reported that approximately two thirds of energy drink consumers are within the age range of 13–35 years old, where boys constitute two thirds of those who patronize these products.

According to Ibrahim and Iftikhar (2014), considering the increasing demand for energy drinks, reported evidence by studies regarding the safety, efficacy, and performance benefits of these products are unsystematic and often contradictory. This complex situation of drawing a firm conclusion has been enhanced by differing protocols as well as the types of products consumed. The United States Food and Drug Administration (2018), has indicated that 400 milligrams of caffeine per day is the recommended amount for a healthy adult. This constitutes about four or five cups of coffee. This amount is considered the safest daily amount that can prevent the dangers associated with high doses of caffeine use. There is however a wide variation in both how sensitive people are to the effects of caffeine and how fast they metabolize it (Olson, 2020).

Being classified as a dietary supplement by the United States Food and Drugs Administration, regulations do not require manufacturers to prove that energy drinks are safe before they can be marketed (United States Food and Drug Administration, 2015). The mandate of the administration is to monitor mandatory serious reporting

of adverse effects by energy drink manufacturers and voluntary adverse effects reporting by healthcare professionals and consumers (United States Food and Drug Administration, 2015).

According to the United States Food and Drug Administration (2018), as the concentration of caffeine in any dietary supplement (including energy drink) increases, so does the risk of caffeine overdose increase, a single teaspoon of pure powdered caffeine can contain the same quantity of caffeine as 28 cups of coffee, and a 1/2 cup of a liquid highly concentrated caffeine product can contain an equal measure of more than 20 cups of coffee. These are toxic measures of caffeine that can have lethal health consequences, including death.

Uses-

There is no clear evidence that the other ingredients in the drink have additional benefits, but these drinks are often promoted to show their specific benefits. Nutritional supplements in energy drinks may claim benefits such as vitamin B12, but there is no guarantee that the supplement can improve human health. Many commercial organizations, such as Red Bull and Monster, have described energy drinks by calling their products "give you wings", "scientifically formulated" or "lethal energy drinks". Energy drinks are marketed specifically to young people, with companies sponsoring or advertising sporting events and concerts, and targeting them via social media. Evidence shows that L-theanine, an ingredient in some energy drinks, has positive effects on mood, anxiety and cognitive function; The effect is more significant when used with caffeine. Whether it's a caffeinated beverage, a mixed drink, or just alcohol, an energy drink when mixed with alcohol is often consumed in public.

Effects-

Energy drinks have the benefits of caffeine and sugar, but there is little evidence that many other ingredients are beneficial. Many of the effects of energy drinks on cognitive performance, such as increased concentration and faster reactions, are primarily due to caffeine. Energy drink advertisements often increase muscle strength and endurance, but there is little evidence in the

scientific literature to support this. The European Food Safety Authority (EFSA) considers 400 mg of caffeine per day (for adults) to be safe. Side effects associated with caffeine intake over 400mg include anxiety, irritability, insomnia, increased urination, irregular heartbeat (irregular heartbeat) and digestion.

Diet is also known to cause pupil dilation. Unlike medications, caffeine supplements are not required to be declared on food product labels in the US, but most, if not all, specify the caffeine content in beverages, and some advocates have urged the FDA to change it as a practice.

With Alcohol -

The combination of caffeine and alcohol can cause alcohol-related harm. Energy drinks can mask the effects of alcohol and a person may misinterpret how drunk they are. Because both caffeine and alcohol are diuretic, the combination may increase the risk of dehydration, and the combination of stimulants (caffeine) and depressants (alcohol) may voluntarily send conflicting messages to the nervous system, causing heart palpitations and palpitations. Although people decide to drink alcohol to prevent drunkenness, many do so to hide the taste of alcohol. However, in 2015, the European Food Safety Authority concluded that "consumption of other ingredients commonly found in soft drinks does not affect the safety of caffeine at a dose of 200 mg".

In addition, alcohol consumption, which causes a blood alcohol level of approximately 0.08% according to EFSA, does not affect the safety of caffeine doses up to 200 mg. Among these diets, caffeine does not seem to mask the feeling of alcohol consumption.

Health Concerns-

Excessive drinking due to caffeine and sugar can have serious health effects, particularly in children, adolescents and the elderly. Binge drinking can affect sleep patterns in teens and may be associated with risk-taking behaviors. Excessive or repeated drinking can cause heart problems such as heart arrhythmias and heart attacks, and mental health problems such as anxiety and phobias. Soft drinks and caffeinated energy have been

linked to athlete deaths in Europe. The review notes that the caffeine content is not the same, and the combination of other ingredients in the drinks makes them more dangerous than soft drinks, where the only stimulant is caffeine; The study notes that more research and government policy are needed.

Studies show that emergency department (ED) visits are increasing. In 2005, there were 1,494 alcohol-related emergency room visits in the United States; In 2011, energy drinks were associated with 20,783 emergency room visits. During this development, male patients were more likely to go to the emergency room than female clients. Studies also show that emergency room visits are often due to insufficient drinking water. In 2011, there were 14,042 hospital visits related to drinking water.

Improper use and abuse of these caffeinated beverages can lead to emergency room visits. In 2011, there were 6,090 emergency medical visits for alcohol use/abuse. In 42% of the patients, the patients mix energy drinks with other stimulants, while in the other 58%, the only thing they drink is energy drinks. Many studies show that energy drinks can be a drug. The American Academy of Pediatrics recommends that children avoid caffeinated beverages.

History-

Energy drinks were an important part of the early retail industry; For example, Pepsi was first marketed as an energy drink. Coca-Cola got its name from its two components, both of which are well-known stimulants: the coca leaf and the kola nut (source of caffeine). In 1904, "used" coca leaves were replaced by fresh coca leaves due to concerns about drug use in food; United States v. Forty and Twenty Barrels of Coca-Cola and subsequent lawsuits forced the Coca-Cola Company to reduce caffeine in its formulations, but the FDA eventually lost its case against impotence because Coca-Cola could not approve the amount of caffeine in the beverage. - 78 mg for 8 fluid ounces, which was at a level comparable to drinking water today at the time of the lawsuit - there is a problem, as desired. These improvements ended the first wave of energy consumption.

In England, Lucozade Energy was started as a medicinal drink for "healing" by Newcastle pharmacist William Walker Hunter as early as 1927; "energy drink. Dr. Enuf is one of the first forty bottled beverages produced in the United States. Its origins date back to 1949 when a businessman from Chicago named William Mark Swartz created a vitamin-rich beverage at the insistence of his colleagues. An alternative to high-calorie sugar." He created an "energy-boosting" drink containing B vitamins, caffeine, and sucrose.

After the bottle call was published in a print book, it formed a partnership with Charles Gordon of Tri-City Beverage to manufacture and distribute pure water. Dr. Enuf is also produced in Johnson City, Tennessee and sold in small quantities nationwide. In Japan, energy drinks date back at least to the early 1960s, with the launch of the Lipovitan brand. In Japan, however, most of these products look a bit like soft drinks and are sold in tin cans in small brown glass medicine bottles or similar containers.

"Eiyōdorinku" (literally "drinking") is sold to office workers. Bacchus-F, a Korean beverage modeled after Lipovitan, emerged in the early 1960s for similar purposes. In 1985, Jolt Cola was introduced to the United States. Its marketing strategy focused on the beverage's caffeine content and touted it as a way to promote purity. The main theme of the drink: "All sugar and twice the caffeine."

In 1995 PepsiCo launched Josta, the first energy drink from a large US company (a company dealing in soft drinks), but Pepsi discontinued the product in 1999. Pepsi later relaunched it under the name AMP. As a return to the energy drink market. "Power Horse", then-Austrian entrepreneur Dietrich Mateschitz created Red Bull, the world's best-selling product in the 21st century. Thai beverage Krating Daeng is owned by Lipovitan. Red Bull is a major brand in the US since its launch in 1997. It has a market share of approximately 47% in 2005.

Frucor Beverages launches Product V, the first energy drink in these markets, in New Zealand and Australia.

The product currently accounts for more than 60% of the market in New Zealand and Australia. British retailers have launched their own brands of soft drinks, mostly at a lower price than the big drinkers made by Canadian beverage Cott. Tesco supermarkets sell 'Kx' (formerly 'Kick'), Sainsbury's 'Blue Bolt', Asda sell 'Blue Charge' - all three soft drinks are sold in 250ml cans and 1-liter bottles - and Morrisons 'The Place' 250ml. It sells boxes. sells other types of spirits in various containers to independent retailers.

In 2002 Hansen Natural launched Monster Energy, an energy drink. After Monster Energy became its largest source of revenue, Hansen Natural Company changed its name to Monster Beverage Corporation with shareholder approval. The company's previous beverage was from The Coca-Cola Company. Since 2002, there has been a growth in the packaging of soft drinks in large boxes. Many countries, including the United States and Canada, have limits on the maximum amount of caffeine per serving in beverages, so companies increase the caffeine content by adding a variety of foods to a can.

Popular brands like Red Bull, Hype Energy Drinks and Monster have increased in size. As a branch of energy drinks, pellet energy products were produced in the United States, including the first "5-hour energy" and other products launched in 2004. A health analyst explained in a March 2014 Medium article: "Drinks are over because of energy drinks. You can drink energy drinks." In 2006, nicotine-fortified soft drinks were sold as nicotine replacement therapy.

In 2007, energy drink powder and effervescent tablets were launched, both of which can be added to water to make energy drinks. Energy drinks are also popular as mixed drinks- Red Bull and vodka are a common combination.

Effects on the kidneys

Caffeine in energy drinks has been shown to increase diuresis. Therefore, hard drinks should be avoided due to the possibility of dehydration during long-term work in hot environments. Body temperature, heart rate, and perceived exertion may be reported to increase.

Caffeine also promotes urinary sodium loss (natriuretic). This affects plasma volume and causes significant changes in heart function during exercise.

In addition, sodium imbalances that occur during long-term work in a hot environment reduce the isometric strength of the legs. Green et al. A case of renal failure has been reported in a 40-year-old man after approximately 2-3 weeks of daily drinking. Serum creatinine increased 5 times compared to baseline, causing no drinking. It then returned to normal 2 days later.

Effects on teeth-

A Swedish study found an association between drinking water and tooth decay. Similarly, Marshall et al. Similar observations were made in American children. Alcohol consumption has been associated with an approximately 2.4-fold increase in dental caries.

Beneficial Effects-

The more beneficial effects of caffeine in beverages will provide consumers with benefits such as improved memory, increased alertness and happiness.

Most recent study Alford et al. They studied the effect of commercial drinking over 36 years. Tests include psychomotor performance (working time, attention, and memory), curiosity, and physical endurance. They show that energy drinks work to improve aerobic endurance (65-75% of maximum heart rate) and aerobic capacity (maintenance of maximum heart rate).

Mental skills such as response selection, attention and memory are also improved, which indicates better listening skills. Another study showed that the same name of the energy drink improved muscular endurance in teenagers who were active during repeated Wingate cycling exercise. However, no changes in peak or mean anaerobic capacity were noted. Hoffman et al.

Energy drinks can also improve performance during exercise without affecting anaerobic performance. Similarly, Ivy et al. A double-blind, randomized, crossover study investigated the effects of pre-meal exercise in 12 male and female cyclists.

Walsh et al. The effect of energy drinks on burnout time during treadmill exercise was studied.

They showed an increase in fatigue time and improvements in focus, strength, and fatigue during moderate-intensity endurance running. In another study evaluating the ability of caffeinated energy drinks to improve acceleration tolerance and power during "G" loading, energy drinks improved G resistance and increased power bounce but did not affect sustained acceleration over time.

A recent study showed that about 3 mg/kg of caffeine in energy drinks improves physical performance in athletes. Wesness et al. A randomized, double-blind, placebo-controlled crossover study on the cognitive and behavioral effects of energy drinks in 94 subjects.

Tests were conducted and emotions were assessed with various questions such as Profiles of Mood States (POMS), Bond-Lader and Chadder Fatigue Scale. Therefore, cognitive function and mood improve in some sleepers who drink alcohol. They were able to maintain their initial level of attention in the 6 hours that the placebo group did not work. Behavior is studied. These studies show improvements in aerobic and anaerobic cycling performance, performance monitoring and/or reaction time, afternoon performance, and many more warning measures.

Ben Smit and Roger compared the behavior of two conventional drinking water systems, treated and untreated. Both energy drinks contain 75 mg of caffeine and the same number of calories that come from glucose. Both alcohol consumption significantly increased self-reported reaction time and alertness compared with the drinking and untreated groups. However, there is no change in memory or processing speed.

The combination of caffeine and glucose in energy drinks can be beneficial. In one study, 11 tired volunteers were tested in a driving simulator while drinking energy drinks. Significant improvements were observed in the time to leave the lane and reaction time 2 hours after the application finished.

CONCLUSION:-

Energy drinks can be beneficial for athletes in a variety of physical activities. However, while drinking energy drinks can be beneficial for performance, potential health issues have been noted, especially for children and teens. All parts of the body are affected by alcohol consumption. Considering this fact and the popularity of this drink, be careful when drinking it. Until independent research confirms these products are safe, the government should regulate the industry on demand, not science.

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