ENERGY DRINKS

Too much sugar and acid to be healthy

BACKGROUND

Energy drinks can help individuals improve certain abilities by boosting energy and alertness, making them particularly appealing to athletes and students. However, these qualities are achieved through glucose, caffeine, or taurine content, which are stimulants shown to have an association with hypertension, anxiety, and heart palpitations. The free sugars and acidic content also increase the risk of dental caries and dental erosion. Obesity can result when large quantities of these drinks are consumed because of the free sugars they contain. The potential health consequences for overusing energy drinks popular in the United Kingdom were investigated, focusing on the 5 top-selling energy drinks in that country.

METHODS

The 5 drinks selected represented 75% of the UK energy drink market. They included Lucozade, Red Bull, Monster, Rockstar, and Relentless. One variety of each was selected and analyzed for pH and sugar content, and the ingredients listed on their product labels were noted.

RESULTS

pH and Free Sugars

The pH values for the drinks ranged from a low of 2.72 for Lucosade Energy to 3.37 for Monster Energy, but all drinks were more acidic than the critical pH value of 5.5, which is viewed as contributing to dental erosion (Figure 1). In addition, the free sugar content was lowest at 10.83 g/100 ml for Relentless and highest at 16.5 g/100 ml for Lucozade Energy.

Each container was considered a single serving, but the size of the serving ranged from 250 ml for Red Bull to 500 ml for Monster, Rockstar, and Relentless. All but Red Bull exceeded the maximum daily recommendation for free sugar intake for men age 19 to 24 years, which was 37 g. The only reason Red Bull did not exceed this recommendation was because its serving size was less. However, a single RedBull would provide more than two thirds of the recommended free sugar intake. The highest free sugar content was 69.2 g per serving (Rockstar), which is 187% of the daily maximum recommendation.

Ingredients

The primary component of the drinks was carbonated water, followed by free sugars, usually sucrose and/or glucose. All had citric, malic, and/or lactic acid for flavor. Acids also served as preservatives and included ascorbic, benzoic, and sorbic acid.

The stimulant caffeine was in all the drinks, with the content being 0.03% in all but Lucozade Energy, which did not report caffeine

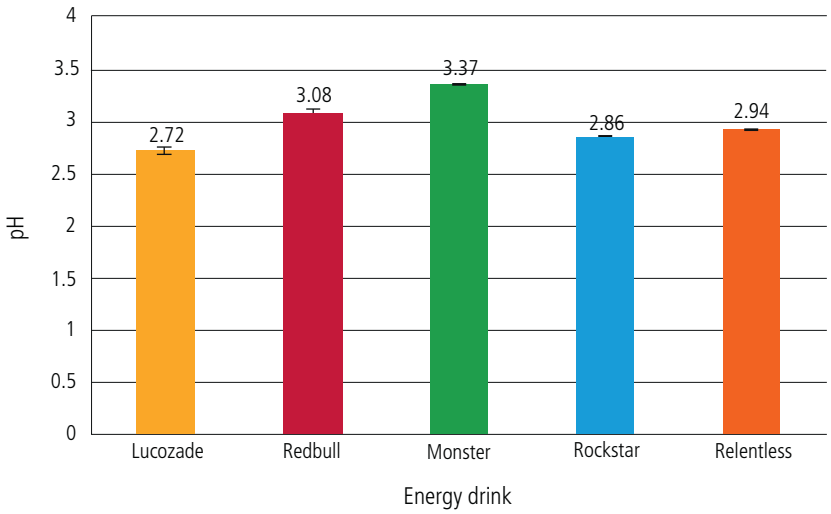

Figure 1. pH values of the top five selling energy drinks in the UK. (Courtesy of Clapp O, Morgan MZ, Fairchild RM: The top five selling UK energy drinks: Implications for dental and general health. *Br Dent J* 226:493-497, 2019.)

Clinical Significance

The drinks not only would prove hazardous to users' oral health but to their overall well-being. Drinking them would likely increase the risk of unwanted weight gain, which brings a wealth of problems with it. The oral health risks of such drinks should be pointed out to patients as part of the dental screening process, since these drinks are often consumed as part of what people view as a healthy lifestyle. Legislation may be needed to ensure that caffeine per serving is limited to a healthier level. Regulation may also be required to keep these drinks out of the hands of children and adolescents and to make everyone aware of the dangers that they pose.

content. Other stimulants were also present, including guarana extract and ginseng root extract. The remainder of the ingredients fell into several categories: preservatives, acidity regulators, vitamins, and colors.

DISCUSSION

The sugar content of all the energy drinks evaluated was more than present maximum dietary recommendations. In addition, the acidic content of the drinks was considerably lower than the critical 5.5 pH level where enamel is eroded or dissolved. These drinks offered clear danger to the oral health of those who drink them.

Clapp O, Morgan MZ, Fairchild RM: The top five selling UK energy drinks: Implications for dental and general health. *Br Dent J* 226:493-497, 2019

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FACIAL EMPHYSEMA

Rare complication of routine dental procedure

BACKGROUND

In subcutaneous facial emphysema (SFE), air is introduced subcutaneously into the fascial planes and soft tissues, causing distension of the skin or mucosa over an area. Although rare, in dentistry the problem is often associated with the air-driven dental handpiece, which is the reported cause in 50% of incidents. SFE occurs most often after dental extraction, especially of the lower third molars, but other dental procedures can also be associated, including crown preparation, implant procedures, and endodontic and restorative treatment. A case was associated with a routine Class V restoration.

CASE REPORT

Woman, 59, who was otherwise healthy, came for Class V restorations of the buccal surfaces of the lower right permanent first molar (46) and lower right permanent first premolar (44). Although she was diagnosed with multiple sclerosis 13 years previously, she currently did not take any immunosuppressants or exhibit reduced quality of life. Her oral hygiene and periodontal health were good, with just noncarious tooth loss on a few buccocervical surfaces.

An inferior alveolar nerve block (IANB) was done to relieve the buccal gingival tissues for retraction cord placement. Minimal preparation of the dentin on the buccocervical abrasion lesions was performed. Lesions were restored after conditioning with 20% polyacrylic acid and placement of a resin-modified glass ionomer cement. Retraction cords were removed, and the restoration was polished using a diamond flame bur in an air-driven high-speed handpiece.

Bubbles were seen extruding from the gingival sulcus, and the patient was unable to open her right eye. She had ipsilateral facial swelling in the periorbital, buccal, and submandibular areas but only general discomfort and tightness in the affected area. No chest tightness, shortness of breath, dyspnea, or nausea was present. Palpation elicited the information that the swelling was fluctuant with a crackling sensation but no tenderness.

After 30 minutes, the patient was referred to the emergency department for assessment. Vital signs were stable, and heart rate, blood pressure, and blood oxygen saturation levels were within normal limits. She was referred to the outpatient clinic since life-threatening concerns were absent.

After examination she was diagnosed with subcutaneous facial emphysema based on her clinical history and presentation. No imaging was required. After visual acuity tests were normal, she was discharged from hospital care. She was able to open her right eye partially.

One day postoperatively, the facial swelling had partially resolved but returned with increased erythema, especially in the periorbital region (Figure 1). The patient's primary complaint was