

Hiding Under a Health Halo:

Examining the Data Behind Health Claims on Sugary Beverages

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Beverage companies commonly promote questionable and often misleading health claims

INTRODUCTION

As a growing body of scientific evidence confirms the strong and unique link between soda consumption and the diabetes and obesity epidemics, major sugary beverage manufacturers have developed marketing strategies to convince children, parents and policymakers that they are on “the public’s side.” Distancing themselves from the scientific evidence, beverage companies commonly promote questionable and often misleading health claims for relatively new categories of nutrient fortified sugar-sweetened beverages – sports drinks, energy drinks, “enhanced” fruit drinks, and bottled teas and coffees – designed and marketed to attract increasingly health-conscious consumers.¹ However, careful investigation clarifies the true nature of these beverages and the reality behind manufacturers’ health claims.

While public health professionals recognize the recently reported trend in decreasing soda consumption among young children over the last decade,² it is likely the result of increased public education and mandated limits in access to these drinks in the school environment. There are concerns that among adolescents, a small decrease in soda sales has been more than compensated for by increases in consumption of sugary sports and energy drinks.³ According to two recently released Centers for Disease Control (CDC) studies, while energy drinks did not exist as a beverage category in 1999/2000,⁴ by 2011 researchers found that eight percent of young people (ages 12-17) drank these products weekly.⁵ Between 2009 and 2011/12 the percent of adolescents in California drinking at least one sports or energy drink per day went from 31 percent to 38 percent — a 22 percent increase in just two years.⁶

Given the rising popularity of nutrient fortified sugary drinks, the California Center for Public Health Advocacy (CCPHA) commissioned the Atkins Center for Weight and Health (CWH) at the University of California, Berkeley, to investigate the list of commonly used supplemental ingredients added to these beverages to determine if they contribute to or detract from the health of children and teens who commonly consume them. This policy brief provides consumers and policymakers with unbiased scientific information about the nutritional content of these products to aid them in determining whether these products should be included in or excluded from children’s diets and from public policies designed to reduce the marketing and availability of sugary beverages more generally.

METHODS

Beverage Selection

The selection of fortified beverages for analysis in this study was based on a Yale Rudd Center marketing analysis⁷ and a physical beverage inventory of eight convenience stores located near secondary schools in five locations across the country. The 21 beverages selected for content analysis include those most commonly advertised and available to youth (Table 1). The nutrition information detailing their contents was assessed, an extensive literature review of the beverage categories and their fortified ingredients was performed, and comparisons were made with the marketing claims associated with each product. A complete description of beverage identification, nutrient analysis and literature review is available in the 2014 report: *Fortified Beverage Consumption Risks Among Youth*, by CWH.⁸

Marketing Information on Fortified Beverages

Capitalizing on the positive connotation of the new beverage category names (e.g., sports, energy), cleverly designed marketing campaigns have created an illusion of a “health halo” for these beverages, leading parents, children and policymakers to believe that these heavily sweetened drinks are healthier than soda. In some states, such as California, manufacturers are taking advantage of loopholes in state laws that allow the sale of sports drinks in schools where other sugary drinks are prohibited. Nationally, the beverage industry spends more than \$71 million annually *in schools alone*, marketing to teens.⁹ CDC researchers found that 20 percent of teens (ages 12-17) surveyed in the *2011 Youth Styles Survey* believed that energy drinks were safe drinks for teens and 13 percent believed that energy drinks were a type of sports drink,¹⁰ likely reflecting the deceptive nature of sugary beverage marketing.

In many cases, beverage manufacturers add ingredients that are popularly considered healthful, such as vitamins or minerals. However, they fail to inform consumers that these vitamins and minerals are best supplied in the average daily diet. As a result, consumers may be taking in vitamins and minerals at higher levels than necessary, while also adding significant amounts of liquid sugar to their diet.

By focusing on vitamin and mineral additives, beverage manufacturers distract consumers from the health risks associated with some of the

Table 1: Beverages Selected for Analysis of Fortification Ingredients

BEVERAGE TYPE	BRAND AND FLAVOR IDENTIFIED
Sports Drinks	Gatorade G Perform 02® (Lemon Lime)
	Gatorade G2 Low Calorie® (Glacier Freeze)
	Gatorade G Recover 03® (Mixed Berry)
	Powerade® Fruit Punch Advanced Electrolyte System
Energy Drinks	Monster Energy®
	RockStar® Energy Drink
	AMP Energy® (Boost Original)
	Red Bull®
Fruit Drinks	Starbucks® Double Shot Energy
	Sobe® Strawberry Banana
	V8® Splash Berry Blend
	Sunny D® Orange
	Tampico® Mango Punch
Flavored Water	Capri Sun® Sunrise
	Kool Aid®
	Vitamin Water® XXX
Sweetened Teas and Coffee	Vitamin Water® Revive
	Sobe® Lifewater Yumberry Pomegranate
Sweetened Teas and Coffee	Arizona® Green Tea
	Snapple® Peach Tea
	Starbucks® bottled Mocha Frappuccino

other common ingredients in their beverages: sugar, salt and caffeine, often delivered at levels that may have serious negative consequences when consumed by youth on a regular basis or in large quantities at a given time.^{11,12} Further, there is concern about a growing list of supplemental ingredients that are added to sweetened sports and energy drinks, flavored juices, teas and coffee drinks. These supplements, and their inclusion in manufacturers’ marketing messages, may lead consumers who are interested in natural and alternative medicine to attach ambiguously perceived health benefits to products that are little more than sugar water. For example, beverage labels may prominently display the inclusion of one or more ingredients such as Milk Thistle or Ginkgo Biloba. While many consumers do not know what, if any, benefit these ingredients provide, the labels and advertising give the impression that these ingredients make the products healthier.

MARKETING CLAIM VERSUS SCIENCE

In 2013, Healthy Eating Research, a project of the Robert Wood Johnson Foundation, assembled a 14-member national expert panel to identify healthy beverage choices for children and adults. The group concluded that healthy beverage choices for children and adolescents should consist primarily of:

1. Plain water
2. Nonfat or low-fat milk (or comparable soy beverages) that is unflavored
3. 100% vegetable or fruit juice in limited quantities (if provided at all)

Contrary to claims being made by some beverage manufacturers, the scientific panel concluded that water is the “gold standard” beverage for hydration for people of all ages. Unfortunately, the overwhelming presence of sugary drink advertisements has obscured this important fact – leading many to believe that added ingredients make water “healthier.”

Sports drinks, energy drinks, fruit flavored drinks and even flavored waters commonly include added ingredients in quantities that *are not at this time proven safe* or have not been shown to provide the benefits that are claimed for them.¹⁴ Table 2 on the next page compares marketing claims made by beverage companies for different types of beverages to the scientific evidence.

The panel’s report, *Recommendations for Healthier Beverages*, is available at www.rwjf.org/content/dam/farm/reports/issue_briefs/2013/rwjf404852.

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HEALTH RISKS OF SUGARY BEVERAGES

Over the past 30 years, the number of obese children has more than tripled.³⁹ Of grave concern are the serious health risks of obesity in childhood and adolescence, including increased risk for being overweight or obese in adulthood, as well as diabetes and cardiovascular disease indicators such as high total cholesterol, high blood pressure and metabolic syndrome.^{40,41} From 1999–2008, the percentage of U.S. teens who have diabetes or prediabetes increased from nine percent to 23 percent.⁴² It is predicted that unless the obesity epidemic is reversed, one in three children born after 2000 — and nearly half of Latino and African American children — will develop Type 2 diabetes in their lifetime.⁴³

An overwhelming body of scientific research shows that sugary drink consumption contributes to chronic disease risk. Sugar-sweetened beverages (such as soda, sports, energy, and fruit drinks) are the largest source of added sugar in the diets of both children and adults in the U.S.⁴⁴ Because liquid

calories do not satiate as well as solid foods, sweetened beverages tend to add to the calories people consume rather than replace them.^{45,46}

Drinking just one soda a day increases an adult’s likelihood of being overweight by 27 percent⁴⁷ and a child’s risk of being overweight by 55 percent.⁴⁸ Drinking one or two sodas a day increases the risk of developing type 2 diabetes by 26 percent.⁴⁹ People who consume the average amount of added sugar, equivalent to one soda per day, are 30 percent more likely to die from a heart attack; people who drink two to three sodas per day are 2.75 times more likely to die from a heart attack.⁵⁰ Drinking sugary beverages daily for just two weeks increases LDL cholesterol and triglyceride levels by 20 percent.⁵¹ After six months, daily consumption of sugary drinks increases fat deposits in the liver by 150 percent, which directly contributes to both diabetes and heart disease.⁵² Consumption of sugar-sweetened beverages has also been associated with decreased intake of more nutritious foods such as milk, fruits and vegetables.^{53,54}

Table 2: Beverage Marketing Claims and Scientific Evidence

TYPE OF BEVERAGE	MARKETING CLAIMS	WHAT THE SCIENCE SAYS
SPORTS DRINKS		
Gatorade G2-Perform® (regular and low calorie)	"Replenish vital nutrients and energy."	Use of sports drinks to replenish "vital" nutrients and energy: Sports drinks are not necessary to replenish nutrients and energy, especially for someone not engaging in continuous, vigorous activity for more than one hour in hot weather. Only under these extreme conditions may the body lose enough electrolytes and deplete blood glucose enough to warrant replacement from a sports drink. The majority of children do not engage in activity under these conditions. At the same time, nutrients contained in these products (calories, potassium, sodium, calcium, magnesium) are already sufficient in the diet for ordinary day-to-day activities. ¹⁵
Powerade® Fruit Punch	"Advanced electrolyte system helps replenish electrolytes lost in sweat."	
Gatorade G2-Perform® (regular and low calorie)	"Drink to help rehydrate, replenish and refuel and savor the sweat."	Use of sports drinks to rehydrate: Water is the optimal beverage of choice for rehydrating for everyday activities, not sports drinks. Only if doing prolonged, vigorous activity for more than one hour in extreme conditions, when the body is more prone to dehydration, are sports drinks recommended. ¹⁵ The majority of youth do not engage in this type of activity where a sports drink is warranted to replace electrolytes. ¹⁶
Gatorade G Series-Recover®	"The first protein and carbohydrate post-exercise recovery drink formulated to quench your thirst while providing hydration and muscle-recovery benefits with its specially designed protein replenishment formula."	Protein-enhanced sports drinks for muscle recovery: The average American diet is high in protein and well supports the needs for muscle rebuilding and growth in adolescents engaging in activity. The average protein requirement for adolescents is about 1 gram per kilogram and most adolescents take in protein well above this requirement from food sources. ¹⁷
ENERGY DRINKS		
Red Bull®	"Improves performance especially during times of increased stress or strain. Increases endurance." "Increases concentration and improves reaction speed."	Energy drinks for enhancing performance and endurance: Energy drink companies advertise these drinks as a performance-enhancing product. When in fact, energy drinks should not be used for endurance activities, as they can pose risk on the body during performance due to the dehydrating and cardiovascular effects of their high caffeine content. ¹⁸ Energy drinks for improving concentration and reaction speed: The few studies that have been completed exploring this concept were conducted by beverage companies themselves, which are less credible sources. ^{19,20} Other studies show mixed results and show intake may even slow reaction speed. ²¹ Also, youth consumption of caffeine has been shown to reduce their ability to focus and concentrate in a learning environment. ²²
RockStar®	"Double Strength, Double Size. Bigger. Better. Faster. Stronger. Rockstar is the world's most powerful energy drink."	Energy drinks for providing boost, power or a buzz: These statements may refer to the stimulants contained in energy drinks, including caffeine and guarana, which indeed stimulate the cardiovascular and nervous system and can have detrimental effects (such as tachycardia) when consumed in large quantities, as found in some energy drinks. ^{23,24}
Monster Energy®	"It's a wicked mega hit that delivers twice the buzz of a regular energy drink."	

TYPE OF BEVERAGE	MARKETING CLAIMS	WHAT THE SCIENCE SAYS
Amp Energy®	"With B vitamins to help kick you into high gear."	<p>B vitamins providing an energy-enhancing element:</p> <p>B vitamins are involved in metabolic pathways in the body but do not provide energy. There is no conclusive scientific evidence that supports the intake of additional B vitamins to speed up these metabolic pathways, increasing the efficiency of energy production in the body.²⁵ Energy is obtained from food calories in the diet, and beverages (including energy drinks) provide excess energy that is not needed in the diets of youth.²⁴ Both energy (calories) and B vitamins are plentiful in the diets of youth.²⁶ B vitamins are plentiful in the American food system and found in a variety of food sources including meat and dairy products, beans, nuts and grains.</p>
FLAVORED WATERS		
Vitamin Water® Fruit Punch Revive	"It's got B vitamins and potassium, some of your body's friends."	<p>B vitamins and potassium as our "body's friends":</p> <p>While B vitamins and potassium are essential for body functions, they are plentiful in the food supply and in the diets of youth,²⁷ and do not need to be obtained from beverages. The Institute of Medicine recommends obtaining B vitamins and potassium from food sources, rather than supplemental forms to reduce any risks that may occur if they are ingested in excess.²⁸ Potassium and B vitamins are best obtained from natural food sources, which are high in additional nutrients.²⁹ Foods high in vitamin B include meat and dairy products, beans, nuts and grains; foods high in potassium include fish, dairy products, beans, fruits and vegetables.</p>
Vitamin Water XXX®	"We only named this drink XXX because it has antioxidant vitamins A & C to help fight free radicals and help support your body"	<p>Vitamins A, C and E as antioxidants: Vitamins A, C, and E indeed act as antioxidants, but they are best obtained from natural sources. Whole fruits and vegetables are high in vitamins A and C; plant oils are high in vitamin E. Youth that drink more fortified fruit drinks and other beverages containing these vitamins have been shown to displace natural food sources of these vitamins in their diet.^{30,31} Professional health associations including the National Institutes of Health, Academy of Nutrition and Dietetics, and American Heart Association discourage the use of antioxidant supplements. Natural forms obtained from plant sources offer additional health benefits, including those from fiber and phytochemicals that also act as antioxidants in the body.^{32,33}</p>
SoBe® Lifewater Yumberry Pomegranate	"Vitamins C and E are antioxidants that help protect the body from damaging free radicals. We're just psyched they're on our side!"	
FRUIT FLAVORED DRINKS		
V8® Splash Mixed Berry	"Vitamins A, C & E Antioxidant Plus"	<p>Vitamins A, C and E as antioxidants: See description above.</p>
SoBe® Strawberry Banana	"Naturally sweetened and lizzle-drizzle with a nice peaceful blend of ginseng and yerba mate."	<p>Ginseng and Yerba Mate for peacefulness: Ginseng and Yerba Mate may be traditionally taken individually for their calming properties, but some research suggests their intake, especially in combination with other stimulants like caffeine, can be harmful. Yerba mate, consumed regularly, has been shown to be associated with some cancers.^{34,35} Ginseng, when taken in conjunction with caffeine, may have synergistic effects, including heart arrhythmia and increased blood pressure.^{36,37,38} The NIH advises against the intake of the combination of caffeine and ginseng due to adverse side effects.</p>

QUESTIONABLE INGREDIENTS IN SUGARY DRINKS

As a follow up to the 2013 *Recommendations for Healthier Beverages*, CCPHA reconvened the national expert panel in 2014 to identify ingredients in beverages commonly consumed by youth that pose potential health risks. The panel identified five types of ingredients beyond calories and sugar that pose potential health risks to youth:

- **Caffeine (and other stimulants):** The FDA limits the amount of caffeine in sodas to 71 mg. per 12 fluid ounces (Food and Drug Administration, 2003). However, there are no FDA limits on caffeine in energy drinks, which range from 80 to 160 mg per serving.
- **Non-caloric sweeteners:** While the expert panel recommended that children and adolescents not consume beverages that contain non-caloric sweeteners, they agreed that the addition of these ingredients could be acceptable for teens (ages 14-18) because they provide a broader range of choices and may reduce calorie intake.
- **Sodium:** Upper limits of sodium consumption⁵⁵ have been established for children and adults based on concerns about the adverse effect that high sodium intake has on blood pressure, which is an independent risk factor for cardiovascular and renal disease.⁵⁶ Given that the average diet of American children exceeds the established safe upper limit for sodium, the national expert panel recommends that youth and adolescents obtain *no more* than 10 percent of the daily limit, or 150 mg of sodium from any given serving of beverage. Sodium in sports drinks ranges from 210 to 400 mg per serving, and energy drinks and even some brands of flavored waters were found to have sodium levels in excess of the recommended limit (e.g. Monster Energy® contains 370 mg and Propel Zero® water contains 230 mg).
- **Vitamins and minerals:** Vitamins and minerals are best obtained from natural food sources in a balanced diet. Added vitamins and minerals that are designated by the National Institutes of Health (NIH) as “likely safe” for children and teens when taken in appropriate amounts include: Vitamin A, Riboflavin (Vitamin B2), Pantothenic Acid (Vitamin B5), Vitamin B6 (pyridoxine), Vitamin B12, Vitamin C and calcium. Other added vitamins and minerals either have no studies demonstrating their safety as supplements for children, or the research conducted to date shows that they are not “likely safe” for children.
- **Other added beverage supplements:** The NIH Office of Dietary Supplements and Natural Medicines Database rates the safety of supplemental ingredients as “likely safe, possibly safe, possibly unsafe, likely unsafe, unsafe.” Of the added supplements found in the fortified drinks that were examined in this review, the only one classified as “likely safe” for children and adolescents was Ginger Extract. Until the growing list of supplemental ingredients added to beverages are able to be classified as “likely safe” for children and adolescents, and the long term effects are studied, the National Expert Panel does not recommend they be consumed by youth.

By focusing on vitamin and mineral additives, beverage manufacturers distract consumers from the health risks associated with some of the other common ingredients in their beverages: sugar, salt and caffeine, often delivered at levels that may have serious negative consequences.

Table 3: Health Issues Associated with Questionable Ingredients in Beverages Commonly Consumed by Youth

BEVERAGE TYPE	MAIN INGREDIENTS OF CONCERN	HEALTH ISSUES ASSOCIATED WITH INGREDIENTS OF CONCERN
Carbonated Sweetened Beverages	Sugar	Overweight, obesity, diabetes, metabolic syndrome, dental caries
Sports Drinks	Sugar, Sodium	Overweight, obesity, diabetes, metabolic syndrome, dental caries, cardiovascular disease and renal disease
Energy Drinks	Sugar, Caffeine, Guarana, Ginseng, Taurine, Ginkgo Biloba, Sodium	Overweight, obesity, diabetes, metabolic syndrome, dental caries, blood pressure and tachycardia, neurological problems, sleep problems, seizure activity, heart arrhythmia, increased blood pressure, attention and behavior problems, jitteriness and nervousness, poorer academic performance and behavior problems in school and lack of health studies on herbal intake for children
Fruit Drinks	Sugar, Vitamin A, Ginseng, Yerba Mate	Overweight, obesity, diabetes, metabolic syndrome, dental caries, Vitamin A overdose and lack of health studies on herbal intake for children
Flavored Water	Sugar, Sodium	Overweight, obesity, diabetes, metabolic syndrome, dental caries, cardiovascular disease and renal disease
Sweetened Teas and Coffee	Sugar, Caffeine, Ginseng	Overweight, obesity, diabetes, metabolic syndrome, dental caries, caffeine-related issues (see Energy Drinks) and lack of health studies on herbal intake for children

The health issues listed were identified through an extensive review of the literature documenting health consequences related to consumption of these beverage types.

Marketers promote these products as improving performance, energy, concentration, endurance and performance. But these beverages do just the opposite, increasing stress, nervousness, anxiety, headaches, insomnia, tremors, hallucinations and seizures, while reducing academic performance. In fact, over-consumption of these products by youths has led to caffeine intoxication resulting in elevated blood pressure, cardiac arrhythmia and several deaths.

IMPLICATIONS FOR POLICY

Fortified beverages marketed to children today — sports drinks, energy drinks, fruit drinks, flavored waters, and sweetened teas and coffees — commonly supply ingredients in quantities that are not at this time proven safe and have not been shown to provide the benefits that are claimed for them. At the same time, these beverages add significant calories to children's and adolescents' diets, with consequent risk of obesity and diabetes, without providing the nutritive values found in 100 percent fruit juice or milk, without exceeding the hydration effect of plain water, and without the fiber that fruit provides. The artificially sweetened beverages provide fewer calories, but often with additives of dubious value and questionable safety.

Based on the absence of scientific evidence demonstrating safe levels of consumption by children and adolescents, combined with a growing number of reports of health risks associated with youth consumption of sports and energy drinks, we conclude that current scientific evidence supports the following actions:

- Prohibit the sale and marketing of sports, energy and any other “new” types of sugary drink in school and enact public policies designed to reduce youth access to, and consumption of, sugar-sweetened beverages.
- Prohibit the sale of energy drinks to children under age 18 until safe consumption levels have been clearly established.
- Require labels on soda, sports drinks, energy drinks and other sugary drinks to alert consumers to their increased risk of obesity and diabetes.
- Require the Federal Trade Commission to develop and implement standards for soda, sports drink, energy drink and other sugar-sweetened beverage advertising aimed at children under age 12.

CONCLUSION

The marketing of fortified beverages as beneficial or health enhancing is not supported by available scientific evidence or expert opinion.

Youth consumption of products that are high in caffeine, sodium and additional supplements that have been shown to cause a number of physiological and behavioral problems among children and adolescents is a matter of growing concern. These products also deliver an unacceptable and unhealthy quantity of liquid sugar, which is a major driver of diabetes and obesity. Recent case reports have highlighted these concerns and have included documented reports of serious health

consequences including cardiac arrest that are a result of the high levels of caffeine in energy drinks. Further research is needed on the potential health impact on children of the various ingredients used in fortifying energy drinks and other sugary beverages.

In addition, serious consideration should be given to the extent in which these beverages replace more nutritious foods and beverages in the diets of children and adolescents, ultimately adding to the potential for both pediatric obesity and dietary deficiencies.

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The majority of added ingredients have not been studied or tested for children and many have known harmful effects if consumed in high quantities by adults. Even more worrisome is the synergistic effect of these ingredients. Caffeine, for instance, when blended with taurine, guarana or ginseng, significantly increases the caffeine properties of the beverage.

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