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A CRITICAL LOOK AT 5-HOUR ENERGY

By Matt Brzycki

Hundreds of beverages are marketed as energy drinks. These beverages have fueled a multi-billion dollar industry with sales of nearly seven billion dollars in 2011 in the United States alone.

By far, the most popular beverage in the "energy shot" category is 5-hour ENERGY which has been marketed in the United States since 2004. The product currently sells more than nine million bottles a week with annual sales approaching one billion dollars. It's touted as being "quick, simple and effective" and "made to help hard working people."

WHAT IT IS

There are three different versions of 5-hour ENERGY: original, extra strength and decaf. It's sold as a 1.93-ounce "shot" with four calories, no herbal stimulants and no sugar (though it does contain sucralose, an artificial sweetener).

The main ingredients of 5-hour ENERGY can be grouped broadly into two categories: B-vitamins and an "energy blend."

B Vitamins

The concoction of B vitamins includes vitamin B6 (as pyridoxine hydrochloride), vitamin B12 (as cyanocobalamin), niacin (as niacinamide) and folic acid (the synthetic version of folate). The amount of B vitamins in a bottle of 5-hour ENERGY is enormous. In fact, each bottle has 2,000% of the % Daily Value of vitamin B6 and 8,333% of the % Daily Value of vitamin B12. This means that one bottle of 5-hour ENERGY provides 20 times the amount of vitamin B6 and more than 83 times the amount of vitamin B12 that you need in a day. Or look at it this way: One bottle provides enough vitamin B6 for 20 days and enough vitamin B12 for more than 83 days.

There's no firm evidence that consuming B vitamins in excess of the Recommended Dietary Allowance provides any health or fitness benefit or increases energy or alertness. Although excess amounts of B vitamins are excreted, abnormally high intakes can lead to adverse effects. For example, a high intake of vitamin B6 can damage sensory nerves; a high intake of niacin can result in nausea and vomiting. The label of 5-hour ENERGY even carries a warning about the possibility of niacin flush, a skin disorder that's characterized by a burning, tingling and itching sensation along with a reddened flush that appears mainly on the face, arms and chest.

Teenagers are especially vulnerable to adverse effects. The Food and Nutrition Board of the Institute of Medicine has determined the Tolerable Upper Intake Levels (UL) of vitamins and minerals. The UL is "the highest level of daily nutrient intake that is likely to pose no risk of adverse health effects to almost all individuals in the general population." To be clear, the UL is the highest level that's tolerable, not the highest level that's recommended.

One or two bottles of 5-hour ENERGY can reach or exceed the UL for youths aged 9 to 18. The UL for vitamin B6 is 60 milligrams for those aged 9 to 13 and 80 milligrams for those aged 14 to 18. Two bottles of 5-hour ENERGY have 80 milligrams of vitamin B6. The UL for niacin is 20 milligrams for those aged 9 to 13 and 30 milligrams for those aged 14 to 18. One bottle of 5-hour ENERGY has 30 milligrams of niacin. And the UL for folate (folic acid) is 600 micrograms for those aged 9 to 13 and 800 micrograms for those aged 14 to 18. Two bottles of 5-hour ENERGY have 800 micrograms of folic acid. (The UL for vitamin B12 hasn't been determined.) And don't forget, these amounts don't include other foods that are consumed throughout the day that contain B vitamins.

The "Energy Blend"

The "energy blend" includes taurine, glucuronic acid (as or from glucuronolactone), malic acid, tyrosine, phenylalanine and citicoline. Also included in the "energy blend" is caffeine and that's what provides the real buzz.

Caffeine – a stimulant of the central nervous system – is perhaps the most widely used drug in the world. Since caffeine isn't a nutrient, products aren't required to show the exact amount on the Nutrition Facts panel. Energy drinks rarely offer this information and 5-hour ENERGY is no exception. The caffeine in the original version is "comparable" to eight ounces (one cup) of the leading premium coffee. The caffeine in the extra strength version is "comparable" to 12 ounces of the leading premium coffee. And the caffeine in the decaf version – the only version in which the exact amount is disclosed by the manufacturer – is six milligrams, about as much as four ounces (one-half cup) of decaffeinated coffee.

An eight-ounce cup of Starbucks coffee has 180 milligrams of caffeine. This would mean that the original version of 5-hour ENERGY has 180 milligrams of caffeine and the extra strength version has 270 milligrams. Remember, that's the amount of caffeine in a 1.93-ounce bottle. (In 2010, an independent testing company found that 5-hour ENERGY contains 15% more caffeine than what's noted by the manufacturer. It's unclear as to which version of 5-hour ENERGY was tested.)

Here's something else to think about when comparing the caffeine in a bottle of 5-hour ENERGY to the caffeine in a cup of coffee: Because a "shot" of 5-hour ENERGY is less than two ounces, the entire bottle can be gulped in a matter of seconds. It takes a significantly longer amount of time to drink a cup of coffee since it's eight ounces and steaming hot. So, drinking a cup of coffee delivers much smaller doses of caffeine that are spread out; drinking a bottle of 5-hour ENERGY delivers one large dose of caffeine all at once. And after gulping two ounces of 5-hour ENERGY, some people would have little or no reservation about downing another two ounces soon thereafter. (The manufacturer recommends that consumers shouldn't drink more than two bottles per day spaced several hours apart but the reality is that in many cases, this information is almost certainly ignored.)

In cola-type beverages, the Food and Drug Administration considers that caffeine is "generally recognized as safe" when the amount is less than about 70 milligrams per 12 ounces. As a point of reference, a 12-ounce can of Coca-Cola has about 35 milligrams of caffeine. If the extra strength version of 5-hour ENERGY does have 270 milligrams of caffeine in 1.93 ounces, its concentration of caffeine is nearly 24 times more than what's "generally recognized as safe" for a cola-type beverage.

When consumed in low doses, caffeine doesn't pose any serious risks for healthy individuals; when consumed in high doses, caffeine has the potential for many adverse effects such as anxiety, jitters, tremors, inability to focus, gastrointestinal distress, diarrhea, insomnia and irritability. Typical symptoms of withdrawal include headache and fatigue. Since caffeine is a potent diuretic – which increases the production of urine – there has been some concern that it can increase the risk of dehydration, a major fear during physical activity, especially in a hot, humid environment.

Concerns about consuming too much caffeine shouldn't be taken lightly. In 2010, the American Association of Poison Control Centers began tracking a separate category for reports of caffeine exposure that are related to energy drinks. That year, 386 cases of caffeine exposure were reported. Five individuals experienced major health effects (in which they "exhibited signs or symptoms as a result of the exposure that were life-threatening or resulted in significant disability"); 45 individuals experienced moderate health effects (in which they "exhibited signs or symptoms as a result of the exposure that were more pronounced, more prolonged or more systemic in nature than minor symptoms," usually requiring some form of treatment).

A big worry is athletes who consume energy drinks prior to working out, practicing and/or competing. Caffeine increases heart rate. So does physical activity. It's not a good idea to increase your heart rate before doing an activity that will also increase your heart rate since this places greater strain on the heart.

RECOMMENDED BY 73% OF DOCTORS?

You've probably seen commercials on television for 5-hour ENERGY. In a recent one, a woman in a business suit is sitting on a desk next to a stack of paper that's piled neatly to a height of what appears to be at least two feet. During the 30-second commercial, many viewers heard the woman say that 3,000 doctors were asked about 5-hour ENERGY and 73% recommend it. But that's not what she said. Read the transcript carefully and you'll get a very different message.

Transcript: "We asked over 3,000 doctors to review 5-hour ENERGY. And what they said is amazing. Over 73% who reviewed 5-hour ENERGY said they would recommend a low-calorie energy supplement to their healthy patients who use energy supplements. 73%. 5-hour ENERGY has four calories and is used over nine million times a week. Is 5-hour ENERGY right for you? Ask your doctor. We already asked 3,000."

So, 73% of the 3,000 doctors who were asked about 5-hour ENERGY didn't recommend it. Nor did they recommend any energy supplement. What they did recommend is a low-calorie energy supplement to their patients if their patients are already using an energy supplement. Hey, what doctor wouldn't recommend a low-calorie energy supplement for those who are already using an energy supplement? If you're going to use an energy supplement, it might as well be low in calories, right?

The wording that's used in this commercial is eerily reminiscent of a commercial for Trident, a sugarless chewing gum, that

appeared in the mid-1960s. That commercial stated, "4 out of 5 dentists surveyed recommend sugarless gum for their patients who chew gum." What dentist wouldn't recommend a sugarless gum for those who are already chewing gum? If you're going to chew gum, it might as well be sugarless, right? To quote the great Yogi Berra, "It's déjà vu all over again."

While the woman is speaking, four statements appear at the bottom of the screen. The statements are in very fine print and shown quickly. As a result, you probably weren't able to read much of the statements if at all. So, let's take a closer look.

First statement: "All doctors surveyed identified themselves as primary care physicians." This statement is shown for two seconds.

Second statement: "Two surveys were conducted to determine the opinions of primary care physicians regarding energy supplements and 5-hour ENERGY: 1) an online survey of 503 participants; and 2) an in-person survey by 5-hour ENERGY representatives of 2,500 participants (50% of those approached). In both, participants agreed to review materials regarding 5-hour ENERGY consisting of label and basic description of its ingredients. Of the 503 online and 2,500 in-person, over 73% said they would recommend a low calorie energy supplement to their healthy patients who use energy supplements." This statement is shown for 10 seconds.

Third statement: "Of the 73% of primary care physicians who would recommend a low calorie energy supplement to their healthy patients who use energy supplements, 56% would specifically recommend 5-hour ENERGY for their healthy patients who use energy supplements." This statement is shown for two seconds.

Fourth statement: "Of all primary care physicians surveyed, 47% would specifically recommend 5-hour ENERGY for their healthy patients who use energy supplements." This statement is shown for two seconds.

Remember, not only are these four statements in very fine print but you're given 16 seconds to read and process the information . . . all while listening to the woman talk.

At any rate, the second statement reveals that 503 doctors reviewed 5-hour ENERGY in an online survey and 2,500 doctors of the 5,000 who were approached by company representatives took an in-person survey. By my math, that's a total of 3,003 doctors who agreed to review 5-hour ENERGY and 5,503 doctors who were approached presumably to review 5-hour ENERGY.

The information in the second statement is sketchy and raises a number of questions. How were the two surveys conducted? How did the 503 doctors learn about the online survey? Did other doctors decline to take the online survey? Why didn't 2,500 doctors participate in the in-person survey? Did they decline to take the in-person survey? Did they make unfavorable comments or show any skepticism about 5-hour ENERGY? Why were they excluded from the data? If those 2,500 doctors said that they wouldn't recommend any energy supplement, this would reduce the number from 73% [2,192 of 3,003 doctors] to 40% [2,192 of 5,503 doctors].

The third and fourth statements offer conflicting information about the percentage of doctors who "specifically recommend" 5-hour ENERGY for their healthy patients who use energy supplements. According to the third statement, 56% of 2,192 doctors [73% of 3,003] would recommend 5-hour ENERGY. That's 1,228 doctors. According to the fourth statement, 47% of the 3,003 doctors who were surveyed would recommend 5-hour ENERGY. That's 1,411 doctors. Not even close. So, which is it: 1,228 doctors or 1,411 doctors?

It's also interesting to note the materials that the doctors reviewed. They only looked at the label that's on a bottle of 5-hour ENERGY and "a basic description of its ingredients."

The website for 5-hour ENERGY makes no reference to the two surveys so detailed specifics are unknown. For a short period of time, another website – which is no longer accessible – was devoted to both surveys but gave no further details. For the most part, it simply echoed the sketchy details that were in the commercial.

In short, no details of the two surveys have ever been published or made known. Similarly, there's no published research that offers any evidence that 5-hour ENERGY lives up to its hype. According to the manufacturer, in 2009, 5-hour ENERGY was examined in a randomized, double-blind, placebo-controlled crossover study that's under peer review. Also according to the manufacturer, the study found that 5-hour ENERGY significantly outperformed a placebo in "continuity of attention and self-related alertness." But again, the study is still under peer review . . . and has been for an unusually long period of time. Or so we're told.

THE LAST REP

Energy drinks are largely unregulated, making their use a risky venture. Coaches should discourage their athletes from using 5-hour ENERGY and any other energy drink.

Matt Brzycki has authored, co-authored or edited 17 books on strength and fitness including four that are devoted to wrestling. His latest book is A Practical Approach to Strength Training (4th edition).