



4-H Consumer Judging Guide

All Fluids Are Not Created Equal...

As consumers become more conscious about the significant role that food plays in keeping them healthy, they often search for products that promote wellness and provide prevention against diseases. Functional food products are becoming increasingly popular due to this perception by consumers. The beverage industry has not wasted much time in capitalizing upon this consumer trend and has responded to this demand by creating health-promoting functional beverages that fit neatly into the healthiness-on-the-go market. According to Beverage Marketing Corporation, functional beverage sales in the U.S. have tripled over the past five years, with sales in 2007 totaling \$9.8 billion. Ready-to-drink noncarbonated beverages showed a 13 percent growth, while soft drinks reported a 3 percent decline during this same period.

Functional Beverages

A functional beverage can be defined as a drink product that satisfies thirst, is nonalcoholic, is ready to drink and includes in its formulation nontraditional ingredients, such as herbs, vitamins, minerals, amino acids or additional fruit/vegetable raw ingredients, depending on the purpose for which it is designed.

Sports and performance drinks, energy drinks, ready-to-drink teas, enhanced fruit drinks, soy beverages, and enhanced water, among others, are some of the product segments under the functional beverages umbrella in the marketplace. Popular ingredients in functional beverages include caffeine, green tea, yerba maté, vitamin C, schizandra, açai, ginger, cranberry extracts and ginkgo biloba.

Enhanced waters are also surging in popularity, with a number of formulations labeled with catchy names and slogans with images of health and tranquility. Soft drinks are even branching into the functional market with vitamin-enriched colas.

But consumers should think twice before sipping drinks that promise to “enlighten your senses” or “sharpen your mind.” While some functional beverages may provide hydration, many may not address today’s major health issues – such as obesity, heart disease, and cancer. Most people do not benefit from low levels of vitamins and minerals found in many of these beverages. Typically, functional beverages do not capitalize on recognized short-fall nutrients like calcium, potassium, folate, and vitamin D but add B vitamins and vitamin C because they are water soluble and can be added without significantly changing the taste.

Functional beverages are often very expensive, usually double that of soft drinks or bottled water. These beverages also add extra calories to one’s diet. For example, one popular energy drink contains 130 calories and 34 grams carbohydrates in an 8.3-ounce serving – this is higher than colas. Other products contain ingredients that have not been sufficiently studied for health benefits, safety and dosage. Caffeine content can also be high in these products. Caffeine content of caffeinated energy drinks ranged from 0 to 141 milligrams per serving. An average 8-ounce cup of coffee contains 133 milligrams of caffeine.

The Food and Drug Administration (FDA), which regulates the claims food and drink makers can put on their labels, does not require companies to seek approval for claims before the products reach store shelves. Specific health claims of links

between a product and disease or about how a nutrient affects functions of the body are supposed to be backed by scientific evidence. However, the FDA cannot get involved until after the product is available to consumers and questionable claims have been made. The FDA is currently reviewing its regulation of functional foods.

The point of drinking any fluid is to rehydrate the body. Tennis players can lose as much as two quarts of water an hour, and a professional football player working out in August can lose a quart and a half. Water works best to replace those fluids, but sometimes athletes want more.

Water

Water has historically been considered the best choice of fluids for athletes. Research has shown that during 1 hour of cycling in the heat, high water intake (1.3 liters or 5½ cups) improved performance 6.5 percent more than lower water intake (200 milliliters or about ¾ cup). However, adding carbohydrates (6-8 percent) to the 1.3 liters of water improved performance another 6.3 percent. Water is a good fluid replacement during exercise for the majority of athletes, especially those who compete in events of short duration (less than 1 hour of intense exercise at a time) where they can replace fluids during the event. Refillable water bottles and jugs are available, making water a relatively inexpensive beverage choice. Commercially bottled water in individual servings is also available, which is a little more costly but might be more convenient, depending upon the situation. When choosing between bottle or tap water, both are safe and equal in nutrition, but tap water may have more fluoride. Cooling water (to about 50-59 degrees F) improves the taste to many people, and water of this temperature may get out to the muscles of the body faster, cooling the body more quickly.

100% Fruit Juice

One hundred percent fruit juice is very nutritious. It provides the same vitamins and minerals naturally found in fruit, although juice is a little lower in fiber. One hundred percent fruit juice is a nutritious beverage choice. However, because of the high amount of naturally present sugar (usually about 12 percent carbohydrate, or 29 grams per 8 ounces), it may cause stomach

distress and impair exercise performance. If used as a fluid replacement for an athlete, juice should be diluted (half water, half juice). One hundred percent fruit juice is often available in single serving containers. Labels should be read to ensure that the product is 100 percent juice. Juice should be diluted for young children also.

Fruit Juice Beverages

Fruit juice beverages, fruit juice drinks, fruit punch and fruit “ades” are not the same as 100 percent fruit juice. These fruit drinks usually contain water, calorie-containing sweeteners, colors and flavoring. Some fruit juice (often as little as 10 percent) is usually added along with vitamin C. Label claims, such as “made with real fruit juice,” should be investigated to determine how much fruit juice is actually in the product. Fruit juice beverages are usually less expensive than 100 percent fruit juice. They may be sold as powdered drink mixes or as ready-to-drink products. Carbohydrate content is generally the same as fruit juice, about 12 percent (29 grams per 8 ounces), which is an amount high enough so that it may cause stomach distress and impair exercise performance. If used as a fluid replacement for athletes, fruit juice beverages should be diluted (half water, half juice).

Sodas

Sodas are carbonated soft drinks (nonalcoholic beverages) made from water, sweeteners, flavorings, colors, acids and carbon dioxide. The calorie-containing sweeteners most often used are sugar and high fructose corn syrup. The non-nutritive sweeteners on the market today used in soft drinks, with table top version listed in parentheses, include aspartame (Equal or Nutrasweet), sucralose (Splenda), acesulfame potassium (Sunette) and saccharin (Sweet 'n Low). All of these non-nutritive sweeteners have been approved by the Food and Drug Administration (FDA). Caffeine, a stimulant, is present in some sodas and must be listed as an ingredient if it is added. It is naturally present in the cola nut, from which colas are made.

Although sodas are popular, they have no nutritional value except for providing fluid and energy from carbohydrates when it is used as the

sweetener (generally sucrose and high fructose corn syrup). The calories that soda provides are considered empty calories because few, if any, vitamins or minerals are present. Soda manufacturers have begun trying to increase the nutritional value of some products by adding vitamins and minerals. The carbohydrate content of sodas, which contain caloric sweeteners, is about the same as fruit juice, about 10-12 percent (38 grams per 12 ounces). This is an amount high enough to potentially cause stomach distress and impair exercise performance for the athlete. Diet soft drinks contain little, if any, carbohydrates. However, stomach discomfort due to the carbonation in sodas could result.

Sports Drinks

Sports drinks are made of water, mineral salts (mainly sodium and potassium) and calorie-containing sweeteners (usually sugar or high fructose corn syrup). They have approximately 50-75 calories, 80-110 milligrams of sodium and 30-45 milligrams of potassium per 8-ounce serving. Sports drinks generally do not contain vitamins or protein. Gatorade and PowerAde are two common sports drinks, although other brands, including generic and store brands, may be available. They are packaged in ready-to-drink, single-serving bottles ranging from 8 to 32 ounces and ready-to-mix powder. The carbohydrate content is usually 6-8 percent (14-18 grams carbohydrate per 8 ounces), an amount that studies have shown is well tolerated in the heat and improves endurance when physical activity is for an hour or more. A recent study showed that consuming 1.3 liters (about 5½ cups) of water alone improved performance during one hour of cycling, but when 79 grams of carbohydrate were added, performance improved even more.

Tea

Sweet tea contains about the same amount of sugar as soda. Regular sweet tea and diet sweet tea are available in single-serving bottles and cans and in larger containers ready to drink. Tea bags and tea leaves are available for those who like to brew their own tea, and powdered tea mixes, with and without sweetener, are also popular. A caffeine-like stimulant is naturally present in tea,

so it should be assumed that the product has caffeine unless it is labeled as “decaffeinated.” In the South, sweet tea typically contains at least as much sugar as soda, about 10-12 percent carbohydrate (38 grams per 12 ounces). This is an amount high enough to potentially cause stomach distress and impair exercise performance for the athlete. Unsweetened tea or tea sweetened with non-nutritive sweeteners does not contain carbohydrates. Regular and decaffeinated tea contains natural antioxidants called flavonoids. However, tea is not a substitute for fruits or vegetables, which provide a wider range of antioxidants along with vitamins and minerals. The potential health benefits of tea are the focus of many scientific studies. However, it is too early to draw any conclusions about tea’s contributions to health.

Flavored Water

Flavored waters or fitness waters are relatively new to the marketplace. Dasani Flavored Water, Sam’s Choice Clear American, Propel, Fruit20 and others are available in various fruit flavors. Most flavored waters contain one or more non-nutritive sweeteners such as sucralose (Splenda), aspartame (NutriSweet or Equal) and acesulfame potassium (Sunette). Sometimes sucrose (table sugar) is also in the sweetening blend, in which case, the product will have some calories from carbohydrates. Some brands also have vitamins and minerals added. In general, flavored waters provide an additional category of beverage choices with the benefits of plain water.

Milk

Like all beverages, milk is a source of water. Milk is approximately 89 percent water. It is also one of the best sources of calcium in the American diet. Along with water, milk supplies us with many essential nutrients – calcium, vitamin D, vitamin A, protein, potassium, riboflavin, vitamin B₁₂, phosphorus and niacin. Fat and calorie content differ between the various types of milk from skim to whole, but the other nutrients are about the same. MyPyramid suggests 3 cups of milk or low-fat dairy product for every person each day. The protein and calcium in dairy products are especially important for athletes as they work to build strong muscles and bones.

Hydration Before, During and After Exercise in the Heat

It is important for athletes to make sure they drink plenty of fluids, beginning several days before an event. The extra water is not stored in the body, but it enables the body to be fully hydrated at the start of the event. According to an article in *The Physician and Sports Medicine*, drinking about 2 cups (16 ounces) of fluid two hours before an event may help keep athletes from becoming dehydrated. However, those participating in sports where a great deal of running is involved may find this uncomfortable, so it should be practiced in training sessions.

Drinking fluids during exercise in the heat reduces dehydration, body temperature and strain on the heart. It can also increase performance. The amount needed varies because of individual differences. General recommendations range from 5-10 ounces of fluid every 15-20 minutes during heavy exercise. If the exercise is for longer than one hour, fluid with 6-8 percent carbohydrates may be beneficial for endurance. In addition, ultra endurance athletes (events lasting 4 hours or more) should consume food or fluid containing carbohydrates, sodium and other electrolytes during and after the event. The amount of fluid which individuals should replace after exercise varies a great deal from person to person. The best way to determine individual fluid replacement needs is to weigh before and after exercise, keeping everything else the same (clothing, shoes, etc.). Replace every pound lost with 1 pint (16 ounces or 2 cups) of fluid (a pint, a pound). Research indicates that

sodium is important for fluid restoration after exercise. Most physically active people do not need to replace the minerals lost in sweat immediately. A meal eaten within a few hours of competition can replace these minerals soon enough for most people.

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