



Information  
About

*Aspartame*



*Discovered in 1965, aspartame is a low-calorie sweetener with a sugar-like taste but is approximately 200 times sweeter than sucrose. Aspartame is unique among low-calorie sweeteners in that it is completely broken down by the body to its components — the amino acids, aspartic acid and phenylalanine, and a small amount of methanol. These components are found in much greater amounts in common foods, such as meat, milk, fruits, and vegetables, and are used in the body in the same ways whether they come from aspartame or common foods.*

Aspartame is one of the most thoroughly studied food ingredients ever, with more than 200 scientific studies confirming its safety. In 1981 aspartame was approved for use in tabletop sweeteners and various foods and dry beverage mixes, making it the first low-calorie sweetener approved by the U.S. Food and Drug Administration (FDA) in more than 25 years. In 1983, FDA approved aspartame for use in carbonated beverages followed by a number of other product category approvals over the next 13 years, leading to a general use approval in foods and beverages in 1996. In addition to FDA, the Joint Expert Committee on Food Additives (JECFA) of the World Health Organization and Food and Agriculture Organization, the Scientific Committee on Food of the European Commission (SCF), and regulatory agencies in more than 100 countries have reviewed aspartame and found it to be safe for use.

Today, aspartame has established itself as an important component in thousands of foods and beverages. Consumer research shows that low- and reduced-calorie foods and beverages have become part of the lifestyle of millions of men and women who want to stay in better overall health, control their weight, or simply enjoy the many low- or reduced-calorie products available. Aspartame has helped provide calorie-conscious consumers with a wide variety of good-tasting, low- and reduced-calorie products that are easily incorporated into a healthful lifestyle. Its excellent taste and suitability for a wide variety of products make it an appropriate choice for people who desire a sweet taste without all the calories of sugar. Currently, aspartame is found in more than 6,000 products and is consumed by over 200 million people around the world.

## Benefits

The rapid rise in aspartame's popularity can be attributed to the many benefits aspartame provides to calorie-conscious consumers, including:

- *Tastes Sweet and Clean*

Studies conducted with taste-test panels show that aspartame's taste is very similar to the taste of sugar.

- *Enhances and Extends Flavors*

Aspartame has the ability to intensify and extend fruit flavors, such as cherry and orange, in foods and beverages. For example, aspartame makes chewing gum taste sweet and more flavorful longer than sugar-sweetened gum.

- *Does Not Promote Tooth Decay*

The American Dental Association has noted it “welcomes the development and FDA approval of new artificial sweeteners that are shown to be safe and non-contributory to tooth decay. ...Aspartame is an FDA-approved, safe sweetening agent and flavor enhancer that can be substituted for sugar in the diet.”

- *Is Helpful for Individuals with Diabetes*

Aspartame offers people with diabetes greater variety and flexibility in budgeting their total carbohydrate intake and allows them to satisfy their taste for sweets without affecting blood sugar, which helps them comply with a healthful meal plan. In addition, consuming products with aspartame can result in fewer calories, which helps people with diabetes manage their weight.

- *Is Beneficial in Weight Control*

With nearly two out of three Americans classified as overweight or obese, taking steps to assure appropriate calorie intake is important for many people. Because products with aspartame are lower in calories than their sugar-sweetened counterparts, using products with aspartame together with regular physical activity can help with weight management.

- *Can Be Part of a Healthful Diet*

Aspartame can reduce or replace the sugar and calories in foods and beverages while maintaining great taste. Thus, aspartame offers one simple step to help people move closer to achieving a more healthful diet.

## Availability In Foods And Beverages

Aspartame is found in about 6,000 products around the world, including carbonated soft drinks, powdered soft drinks, chewing gum, confections, gelatins, dessert mixes, puddings and fillings, frozen desserts, yogurt, tabletop sweeteners, and some pharmaceuticals such as vitamins and sugar-free cough drops. In the United States, all food ingredients, including aspartame, must be listed in the ingredient statement on the food label.



Several tabletop sweeteners containing aspartame as the sweetening ingredient can be used in a wide variety of recipes. However, in some recipes requiring lengthy heating or baking, a loss of sweetness may occur; this is not a safety issue — simply the product may not be as sweet as desired. Therefore, it is best to use tabletop sweeteners with aspartame in specially designed recipes available from the manufacturers of these tabletop sweeteners. Aspartame tabletop sweeteners may also be added to some recipes at the end of heating to maintain sweetness.

## Aspartame and a Healthful Lifestyle

Health experts agree that eating well and being physically active are keys to a healthful lifestyle. To help people achieve a more healthful lifestyle, the U.S.

government provides “Dietary Guidelines for Americans,” which encourage consumers to “Choose and prepare foods and beverages with little added sugars or caloric sweeteners.” The World Health Organization also recommends a number of dietary guidelines to combat increases in chronic diseases such as obesity, high blood pressure, cancer, and diabetes. One recommendation is to limit sugars added to some foods and beverages. As a sweetener, aspartame can reduce or replace the calories in foods and beverages while maintaining great taste, offering one simple step to help people move closer to achieving a more healthful diet.



Further, studies have shown that foods and beverages sweetened with aspartame can be an effective “tool” as part of a weight management program. Aspartame, however, is not a drug and does not stimulate weight loss. It does help make possible good tasting low- or reduced-calorie foods and beverages for those who wish to control or decrease their caloric intake. Researchers at Harvard Medical School have concluded that aspartame “is a valuable adjunct to a comprehensive program of balanced diet, exercise and behavior modifications for losing weight.”

## Safety

Aspartame is one of the most thoroughly studied ingredients in the food supply. It was tested in more than 100 scientific studies before the FDA approved it in 1981. The studies were conducted in laboratory animals and humans, including healthy infants, children, and adults, lactating women, people with diabetes, obese individuals, and people who are carriers of the rare genetic disease phenylketonuria (PKU). Upon approving aspartame, the FDA Commissioner noted, “Few compounds have withstood such detailed testing and repeated, close scrutiny, and the process through which aspartame has gone should provide the public with additional confidence of its safety.”

After FDA approval, extensive additional research has been done with aspartame, which further confirmed its safety for the general population. In fact, aspartame has been tested for more than three decades, in more than 200 studies, with the same result: Aspartame is safe.

In addition to FDA, aspartame has been reviewed and determined to be safe by the Joint Expert Committee on Food Additives (JECFA) of the Food and Agriculture Organization and the World Health Organization, the Scientific Committee on Food of the European Commission, and the regulatory bodies of over 100 countries. Independent health organizations, such as the American Medical Association’s Council on Scientific Affairs, the American Diabetes Association, and the American Dietetic Association, have reviewed research on aspartame and found it to be safe. Links to numerous governments, expert committees, and health organizations, which have confirmed the safety of aspartame, can be found at [www.aspartame.org](http://www.aspartame.org).

## How the Body Handles Aspartame

Aspartame is composed of two amino acids, aspartic acid and phenylalanine, as the methyl ester. Amino acids are the building blocks of protein. Aspartic acid and phenylalanine are also found naturally in protein containing foods, including meats, grains and dairy products. Methyl esters are also found naturally in many foods such as fruits and vegetables and their juices.

Upon digestion, aspartame breaks down into three components (aspartic acid, phenylalanine and a small amount of methanol), which are then absorbed into the blood and used in normal body processes. Neither aspartame nor its components accumulates in the body. These components are used in the body in the same ways as when they are also derived from common foods.

Further, the amounts of these components from aspartame are small compared to the amounts from other food sources. For example, a serving of non-fat milk provides about 6 times more phenylalanine and 13 times more aspartic acid compared to an equivalent amount of diet beverage sweetened 100% with aspartame. Likewise, a serving of tomato juice provides about 6 times more methanol compared to an equivalent amount of diet beverage with aspartame.

## Aspartame Intake

The Acceptable Daily Intake (ADI) is an important regulatory concept, which is frequently misunderstood. The ADI is a very conservative estimate of the amount of a sweetener that can safely be consumed on a daily basis over a person's lifetime. It is not a specific point at which safety ends and possible health concerns begin. In fact, occasional intake above the ADI is not of concern.

The FDA has set the ADI for aspartame at 50 mg/kg of body weight/day. The chart that follows describes the approximate number of servings of various aspartame-containing products that an adult and child would need to consume to reach the ADI for aspartame.

Aspartame-containing <u>Product</u>	Approximate number of servings per day to reach the ADI	Approximate number of servings per day to reach the ADI
	<u>Adult (150 lb.)</u>	<u>Child (50 lb.)</u>
Carbonated soft drink (12 oz.)	20	6
Powdered soft drink (8 oz.)	33	11
Gelatin (4 oz.)	42	14
Tabletop sweetener (packet)	97	32

Extensive market research has shown that aspartame consumption patterns for the general population and various subgroups are well below the ADI. Aspartame consumption by high-level consumers (90th percentile) in the general population, including children, is between 5% and 10% of the ADI. This means that 9 out of 10 people consume less than 10% of the ADI.

## Use By Special Groups

- *Children*

Studies have documented that aspartame is safe for use by children. However, children need calories to achieve proper growth and development. Thus, parents should supervise their children's diet to avoid dietary excesses or nutritional deficiencies.

- *Pregnant or breastfeeding women*

The FDA and the Council on Scientific Affairs of the American Medical Association agree that women who are pregnant or breastfeeding can safely use aspartame. Sufficient calories are important during pregnancy and breastfeeding, and calories should come from foods that contribute to nutrient needs rather than from foods low in nutrients. The variety of foods and beverages sweetened with aspartame can help satisfy a pregnant woman's taste for "sweets" without adding extra calories, leaving room for more nutritious foods.

- *Diabetic individuals*

The American Diabetes Association states that aspartame is a safe and useful sweetener for people with diabetes. Aspartame makes food taste sweet and can significantly reduce or even eliminate the amount of calories and carbohydrate in foods and beverages. Research shows that aspartame does not affect short-term or long-term blood sugar levels in people with diabetes. Foods and beverages sweetened with aspartame offer people with diabetes a much wider variety of products from which to choose and greater flexibility in budgeting their total carbohydrate intake. Thus, it can help them follow nutrition recommendations and still enjoy good-tasting foods. About 90 percent of people with diabetes use aspartame-sweetened products.



- *Phenylketonuria*

Phenylketonuria (PKU) is a rare inherited disease that prevents the essential amino acid phenylalanine, one of the components of aspartame, from being properly metabolized. (An essential amino acid is required for normal growth, development, and body functioning and must be obtained from the diet, as the body cannot make it.) Because of this, phenylalanine can accumulate in the body and cause health problems including mental retardation. In the U.S. and many other countries, routine screening for PKU is required for all newborns. In the U.S., about 1 in 15,000 babies is born with PKU. People with PKU are placed on a special diet with a severe restriction of phenylalanine from birth to adolescence or after. Women with PKU must remain on the special diet throughout pregnancy. Since individuals with PKU must consider aspartame as an additional source of phenylalanine, aspartame-containing foods must state "Phenylketonurics: Contains Phenylalanine" in the U.S.

## Unfounded Allegations

The overwhelming body of scientific evidence clearly demonstrates that aspartame, even in amounts many times what people typically consume, is safe and not associated with adverse health effects. However, over the years, some consumers have reported symptoms, which they believed were associated with aspartame. The FDA has investigated these allegations and concluded that there is no “reasonable evidence of possible public health harm” and “no consistent or unique patterns of symptoms reported with respect to aspartame that can be causally linked to its use.” In 1984, the Centers for Disease Control (CDC) reviewed 517 of these anecdotal reports and stated, “the majority of frequently reported symptoms were mild and are symptoms that are common in the general populace” and that “focused” clinical studies would be the best way to evaluate these complaints.

As a result, numerous scientific studies “focused” on the allegations were conducted by expert researchers at major academic institutions. The results of these studies overwhelmingly demonstrate that aspartame is not associated with adverse health effects, including headaches, seizures, changes in mood, cognition or behavior, or allergic reactions.

Despite the overwhelming documentation of aspartame’s safety, unfounded allegations that aspartame is associated with a myriad of ailments, including multiple sclerosis, Parkinson’s disease, Alzheimer’s disease, and lupus, have continued to be spread via the Internet and the media by a few individuals who have no documented scientific or medical expertise. Recently, several governments and expert scientific committees carefully evaluated the Internet allegations and found them to be false, reconfirming the safety of aspartame. In addition, leading health authorities, such as the Multiple Sclerosis Foundation, The National Multiple Sclerosis Society, The National Parkinson Foundation, Inc., the Alzheimer’s Association, and the Lupus Foundation of America, have concluded that the Internet claims are false.



## The Future

Consumer research shows that low-calorie foods and beverages have become part of the lifestyle of millions of men and women who want to stay in better overall health, control their weight, or simply enjoy the many low-calorie products available. Aspartame helps provide calorie-conscious consumers with a wide variety of good-tasting, low-calorie products that are easily incorporated into a healthful lifestyle.

# Safety Confirmed

## Some highlights:

**European Food Safety Authority Reconfirms Aspartame's Clean Bill of Health (December, 2002)** — The Scientific Committee on Food (SCF) of the European Commission has reconfirmed aspartame's clean bill of health following a comprehensive review of the sweetener's safety. "The Committee concluded that on the basis of its review of all the data in animals and humans available to date, there is no evidence to suggest that there is a need to revise the outcome..." of the prior endorsement of aspartame's safety.

**U.K. Food Standards Agency** — On December 18, 2002, the United Kingdom's Food Standards Agency (FSA) issued a statement announcing that "the Agency supports the conclusions of the Committee's [Scientific Committee on Food] thorough and timely review on the safety of the sweetener [aspartame]."

**The French Food Safety Agency (AFSSA) Supports Safety of Aspartame** — AFSSA recently reported a two-year study by the French Expert Committee on Flavourings, Food Additives and Processing Aids and has confirmed the safety of aspartame once again. The AFSSA was asked to review an alleged link between aspartame and brain tumors. The report, published on May 7, 2002, noted, "In conclusion, AFSSA considers that the current state of scientific knowledge does not enable a relationship to be established between the exposition to the aspartame and brain tumors in humans or animals."

**FDA Consumer Magazine (May-June 2002) Confirms Safety of Aspartame** — The FDA considers aspartame to be one of the most thoroughly tested and studied food additives the agency has ever approved. More than 100 toxicological and clinical studies reviewed by the agency confirm that aspartame is safe for the general population.

**Health Canada Re-affirms Aspartame's Safety (February 2003)** — Health Canada states, "Before consideration was given to permit-

ting aspartame for use in foods in Canada, officials of Health Canada evaluated an extensive array of toxicological tests in laboratory animals and, since its listing for use, they have examined the results of a number of clinical studies in humans. There is no evidence to suggest that the consumption of foods containing this sweetener, according to the provisions of the Food and Drug Regulations and as part of a well-balanced diet, would pose a health hazard to consumers."

**American Dietetic Association (ADA) Supports Safety and Usefulness of Aspartame** — The 2004 updated position paper on nutritive and nonnutritive sweeteners from the ADA was released in February 2004 and states, "A comprehensive review of the safety of aspartame has recently been published. The review covers previous publications as well as new information that support the safety of aspartame as a food additive and negates claims of its association with a range of health problems..."

**British Medical Journal (BMJ)** — An October 2004 issue of the *BMJ* carries an editorial concluding that aspartame has been "demonised unfairly" in sections of the press and on the Internet.

The *BMJ* editorial states: "Evidence does not support links between aspartame and cancer, hair loss, depression, dementia, behavioural disturbances, or any of the other conditions appearing in websites. Agencies such as the Food Standards Agency, European Food Standards Authority, and the Food and Drug Administration have a duty to monitor relations between food-stuffs and health and to commission research when reasonable doubt emerges... The Food Standards Agency takes public concerns very seriously and thus pressed the European Scientific Committee on Food to conduct a further review, encompassing over 500 reports, in 2002. It concluded from biochemical, clinical, and behavioural research that the acceptable daily intake of aspartame remained entirely safe-except for people with phenylketonuria."

For more information on aspartame and comments from governments and independent health organizations about aspartame, visit [www.aspartame.org](http://www.aspartame.org).



Calorie Control Council

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