Aspartame (Q&A)

12 October 2013

Available for over 30 years, aspartame is approved for use in more than 100 countries around the world. Aspartame is a very thoroughly tested food additive with a comprehensive body of studies conducted in animal models and humans. All of these studies demonstrate that aspartame is safe.

The first European safety assessments of aspartame were published by the European Commission’s former Scientific Committee on Food (SCF) in 1984. Subsequent complementary assessments were made by the SCF in 1988, 1997 and 2002. Since the establishment of the European Food Safety Authority (EFSA) in 2002, the Authority reconfirmed the safety of aspartame in 2006, 2009, 2010, 2011 and most recently in 2013.

What is aspartame and why is it used?

Aspartame is a low calorie sweetener. Aspartame provides 4 Calories per gram (similar to sugar) but because, weight for weight, it is approximately 200 times sweeter than sugar, very little aspartame is needed to sweeten foods. Aspartame therefore adds practically no calories to foods. Aspartame mimics well the taste of sugar, enhances citrus and other fruit flavours, and does not contribute to tooth decay.

In which products is it used?

Aspartame is used to replace sugar for the production of ‘energy-reduced’ food or food with ‘no added sugar’. It is also used in the production of food for particular nutritional uses. Examples of foods and beverages falling within these categories include sparkling soft drinks, desserts, sweets, chewing gum, yogurt, and table-top sweeteners.

What happens to aspartame in the body once it is ingested?

Aspartame breaks down in the gut into its three constituent parts: two amino acids - aspartic acid and phenylalanine - and methanol, which are then absorbed into the blood. The two amino acids (aspartic acid and phenylalanine) are building blocks of protein and are found naturally in many everyday foods such as meat, fish, cheese, eggs and milk. Methanol is also found naturally in many foods, such as fruits and vegetables and their juices, and is part of the normal diet.

These components are used in the body in exactly the same ways as when they are derived, in much greater amounts, from common foods and beverage. For example, milk provides about 5 times more phenylalanine and 11 times more aspartic acid than a beverage sweetened with aspartame; tomato juice provides over 3 times the amount of methanol as an aspartame-sweetened beverage. Neither aspartame nor its components can accumulate in the body.

How can I tell if a product contains aspartame?
People can identify foods and drinks containing aspartame by looking at the ingredients list on the product label. Like all food additives approved for use in the European Union, aspartame has been assigned an "E-number". Its presence in foods is indicated either by its name (i.e. "aspartame") or by its number (E-951).

Products containing aspartame should also state that it is a source of phenylalanine. This label is there to help people with a rare inherited genetic disorder called phenylketonuria (PKU). These people cannot metabolise phenylalanine from any source and need to control their intake of this amino acid.

How was aspartame approved in the European Union?

Aspartame was first authorised for use by individual Member States in the 1980s. European legislation harmonising the use of low calorie sweeteners in foodstuffs was introduced in 1994, following thorough independent safety evaluations by the European Commission Scientific Committee for Food (SCF) in 1984 and 1988. Further reviews of the data on aspartame were carried out in 1997 and 2002 by the SCF and these reconfirmed its safety.

Today, the European Food Safety Authority (EFSA) is responsible for the work previously carried out by the SCF. Since the establishment of EFSA in 2002, the Authority reconfirmed the safety of aspartame in 2006, 2009, 2010 and 2011. The latest assessment of aspartame by EFSA was published on 10th December 2013. It forms part of its re-evaluation of all food additives which were authorised in the EU prior to 20 January 2009.

EFSA concluded that aspartame and its breakdown products in the body (phenylalanine, aspartic acid and methanol) are safe for human consumption at current intake levels and that the current Acceptable Daily Intake (ADI) of 40 milligrams per kilogram of body weight per day is suitable for the general population. However, in patients suffering from the medical condition phenylketonuria (PKU), the above ADI is not applicable, as they require strict adherence to a diet low in phenylalanine. With respect to pregnancy, EFSA noted that there was no risk to the developing foetus from exposure to phenylalanine derived from aspartame at the current ADI (with the exception of women suffering from PKU). EFSA also makes clear that the breakdown products of aspartame are also naturally present in other foods, for example methanol is found in fruit and vegetables. The contribution of breakdown products of aspartame to the overall diet is low.

Has the safety of aspartame been reviewed by other organisations?

The full body of science on aspartame has been reviewed by regulatory authorities around the world, including the US Food and Drug Administration (FDA) and the Joint Expert Committee on Food Additives (JECFA) of the United Nations Food & Agriculture Organisation and the World Health Organisation. In every case, aspartame was found to be safe.

For more information:

• FIC information on aspartame

• Calorie Control Council information on aspartame

• International Sweeteners Association's fact sheet on aspartame

For further information, please refer to the following credible bodies from around the world:

European Food Safety Authority (EFSA)

EFSA has reconfirmed the safety of aspartame on numerous occasions. For further information please see documents published in 2006, 2009, 2010, 2011 and 2013. Additional information on the public consultation surrounding the 2013 re-evaluation of aspartame is available here. For more general information please see EFSA’s website.

Scientific Committee on Food of the European Commission

The food safety advisory body in Europe, the Scientific Committee on Food (SCF) of the European Commission, reconfirmed aspartame's clean bill of health following a comprehensive review of the sweetener's safety. The SCF was a body of independent scientific experts which advised the European Commission on matters of food safety before the European Food Safety Authority (EFSA) was set up; the SCF's aspartame report was issued on December 10, 2002.

U.K. Food Standards Agency

Aspartame was first approved for use in the UK in 1983 following a review by the Committee on Toxicity (COT), a group of independent experts who advise the Government on the safety of food ingredients. The COT has fully reviewed aspartame after studying all the available scientific information and found it to be safe for consumption. Up-to-date bulletins regarding this information can be found here.

French Food Safety Agency (AFSSA)

The French Food Safety Agency (AFSSA) in 2002 completed 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 English translation of its report and opinion on the safety of aspartame is now available.

U.S. Food and Drug Administration
The United States Food & Drug Administration (FDA) approved aspartame for use in dry products in 1981 and for use in sparkling beverages in 1983. The FDA affirmed the safety of aspartame no fewer than twenty-six times leading up to the agency's approval of aspartame as a general purpose sweetener in 1996.

Health Canada

Health Canada states, "...Before consideration was given to permitting 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."

Food Standards Australia New Zealand

A survey was undertaken in September 2003 which looked in detail at intake levels of aspartame among average and high consumers. The survey found that, among average consumers of aspartame, the intakes were low and that even among high consumers (those who regularly consume large amounts of drinks and other foods containing aspartame), intake was below 25% of the ADI. In summary, FSANZ concluded that aspartame is a safe food additive.

Centers for Disease Control & Prevention (CDC)

After investigating consumer inquiries, the CDC concludes that, although certain individuals may be unusually sensitive to aspartame, there is no evidence of any serious, widespread, adverse health consequences attendant upon its use. An agency of the Department of Health and Human Services, CDC's mission is to promote health and quality of life by preventing and controlling disease, injury, and disability.

Alzheimer's Association

The Alzheimer's Association is the largest US voluntary health organization supporting Alzheimer's research and care. The site states, "Several studies have been conducted on aspartame's effect on cognitive function in both animals and humans. These studies found no scientific evidence of a link between aspartame and memory loss."

American Cancer Society

The American Cancer Society (ACS) is committed to fighting cancer through balanced programs of research, education, patient service, advocacy, and rehabilitation. The ACS's website clearly states that aspartame does not cause cancer. In fact, aspartame (due to the nature in which it is metabolized) never reaches the organs of the body.
ACS Guidelines on Nutrition and Physical Activity for Cancer Prevention

American Council on Science and Health

ACSH reminds consumers that aspartame is safe and offers further general information on low calorie sweeteners. ACSH is a consumer education consortium concerned with helping consumers distinguish between real and hypothetical health risks.

American Diabetes Association

American Diabetes Association, the nation's leading non-profit health organization providing diabetes research, information and advocacy, states that there is no credible scientific evidence linking aspartame to any health-related problems for people with diabetes.

American Dietetic Association

ADA concludes aspartame is safe and has issued a position statement approving non-nutritive sweeteners including aspartame. ADA is the professional organization that establishes standards of quality for practice for nearly 70,000 dietetic professionals, most of whom are registered dietitians.

American Heart Association

The American Heart Association is dedicated to providing education and information on fighting heart disease and stroke. The organization has found, through extensive investigation, that aspartame has not caused any serious side effects.

Asthma and Allergy Foundation of America

The Asthma and Allergy Foundation of America is dedicated to helping those with asthma and allergies improve their quality of life through education, advocacy and research. This site notes that alleged reactions to aspartame have not been verified.

British Medical Journal Editorial Concludes Aspartame Criticisms Are Unfounded

The October 2, 2004 issue of the British Medical Journal carried an editorial concluding that aspartame had been "demonised unfairly" in sections of the press and on the Internet.

Canadian Diabetes Association

The Canadian Diabetes Association confirmed the safety of aspartame as part of its "Canadian Diabetes Association National Nutrition Committee Technical Review: Non-nutritive Intense Sweeteners in Diabetes Management," which was published in the Canadian Journal of Diabetes. The review notes, "At this time,
there is no scientific evidence to support the negative health effects that have been ascribed to aspartame."

Lupus Foundation of America

The Lupus Foundation of America is a nationwide volunteer organization serving the lupus community, including patients, their families, physicians, researchers, and the general public. The site notes in this question asking whether there was "any truth to the claims being circulated on the Internet that lupus is caused by the artificial sweetener, aspartame?" that there is no credible scientific evidence to support a link between aspartame and lupus.

Massachusetts Institute of Technology

Scientists at the Massachusetts Institute of Technology's Clinical Research Center conducted a study which concluded that aspartame is safe for the general population. Findings are noted here in this section entitled "Study reaffirms safety of aspartame." MIT is known for its Nobel prize-winning staff and excellence in science and math.

MIT website (1998), Study reaffirms safety of aspartame