

Aspartame

What is aspartame?

Aspartame is an intense sweetener used to replace sugar in foods and drinks. It is a product that consists of two amino acids (aspartic acid and phenylalanine), joined together by a special chemical link. Amino acids are the basic building blocks of proteins, which are in turn building blocks of the human body, and the bodies of all organisms. Amino acids are therefore very common in food. Aspartame breaks down following digestion in the human body to very low levels of its amino acids and to other products (e.g. methanol).

Food Standards Australia New Zealand (FSANZ) and other international regulatory agencies have approved aspartame for general use in a range of foods including tabletop sweeteners, carbonated soft drinks, yoghurt and confectionery.

Is aspartame safe?

Yes. FSANZ and other international regulatory agencies have concluded that aspartame is safe.

The safety of aspartame has been extensively studied, including both its short-(acute) and long-term safety. In particular, studies where rats and mice have been fed aspartame, even in very high doses over long periods of time, have demonstrated that aspartame has no cancer-causing effect (no genotoxicity or carcinogenicity). A number of studies in human volunteers, including people with diabetes, have also shown that aspartame is a safe food additive.

In 1994, FSANZ (when it was the National Food Authority) investigated the dietary consumption of intense sweeteners in foods eaten by Australians. For aspartame and three other intense sweeteners, this included comparing the amounts that were being eaten to their acceptable daily intake (ADI). An ADI is the amount of a food additive that a person can consume every day over an entire lifetime without any appreciable health risks. Average consumers of aspartame had intakes well below the ADI at 7% of the ADI. Even those people who ate the most aspartame (90th percentile of intake) were well below the ADI, at less than 30%. This showed that there were no safety concerns with the levels of aspartame in foods in Australia.

A more recent survey in September 2003 was undertaken which looked in detail at intake levels of aspartame for average and high consumers. The survey found that for average consumers of aspartame the intakes were low (6% of the ADI) and similar to the previous survey; even for 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 has concluded that, in Australia, aspartame is a safe food additive, and levels in food are well below those at which adverse health effects might occur.

Has the safety of aspartame been considered by other regulatory agencies or expert Committees?

Yes. Aspartame has been a very extensively studied food additive. International regulatory bodies that review the safety of food additives have evaluated the many studies of aspartame, including animal and human trials, and have concluded that it is safe.

The Joint (FAO/WHO) Expert Committee on Food Additives (JECFA) evaluated aspartame in 1980, setting an ADI. The ADI for aspartame is 40 milligrams per kilogram of body weight per day (40 mg/kg bw/day). This is based on the highest level that had no effect when fed to rats over a long period of time.

The European Commission's Scientific Committee on Food (SCF) published an updated opinion on the safety of the sweetener aspartame in December 2002. After an extensive review of all the data available, which was more than 500 pieces of research, the Committee concluded that there was no need to revise its earlier risk assessment, which concluded that aspartame is safe. The SCF also concluded that there is no need to revise the 1980 ADI calculation for aspartame of 40 mg/kg bw/day, which is consistent with the ADI established by JECFA.

A study in the USA in 2006 by the National Cancer Institute involving 340,045 men and 226,945 women (aged 50 to 69) found no link between aspartame consumption and cancer.

A recent review in 2007, carried out by a panel of internationally recognised scientists, evaluated more than 500 studies, articles and reports conducted over the last 25 years on aspartame, including unpublished works submitted to the US Food and Drug Administration for the approval of aspartame [1]. The panel concluded that aspartame is safe, in the amounts people currently eat. No credible evidence was found that aspartame could cause cancer, affect nervous system function, learning or behaviour, or have any adverse effect on health, even when consumed in much greater amounts than the established ADI.

During 2008 and 2009, an Advisory Forum of the European Food Safety Authority (EFSA) reviewed the available information and data on the safety of aspartame. The Organising Team considered and reported on the amount of aspartame people were eating, and the information available on the effect of aspartame on brain function, appetite, allergies, the immune system, metabolism, diabetes, and cancer (including cancer epidemiology and genotoxicity). The National Experts did not identify any new evidence that suggested that EFSA should reconsider its previous Opinions that aspartame is a safe food additive <http://www.efsa.europa.eu/en/scdocs/doc/af100423.pdf>.

Phenylketonuria

Phenylketonuria (PKU) is a genetic disorder characterized by a deficiency in an enzyme necessary to metabolise the amino acid phenylalanine to another amino acid named tyrosine. When this enzyme is deficient phenylalanine accumulates. If left untreated, this can cause problems with brain development, leading to progressive mental retardation, brain damage, and seizures. It is managed by controlling phenylalanine levels through diet, or a combination of diet and medication.

Individuals with PKU need to adhere to a special diet low in phenylalanine for at least the first 16 years of their lives. This requires severely restricting or eliminating foods high in protein, such as meat, chicken, fish, eggs, nuts, cheese, legumes, cow milk and other dairy products.

As many artificially-sweetened foods and soft drinks contain aspartame (which breaks down to phenylalanine) mandatory labelling was introduced to alert people with PKU that the product contains phenylalanine.

Is aspartame labelled?

Yes. FSANZ recognises that some people prefer to avoid certain food additives. On food labels, food additives are required to be identified by their class name (e.g. sweetener) and by an individual name or code number. The additive number for aspartame is 951. Labelling food products in this way allows people to avoid products containing aspartame if they wish.

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[1] Magnuson BA, Burdock GA, Doull J et al (2007) Aspartame: A safety evaluation based on current use levels, regulations, and toxicological and epidemiological studies. [Critical Reviews in Toxicology](#), Volume 37, Issue 8 September 2007, pages 629 – 727