

## **The Aspartame Information Service responds to The Ecologist**

The article which appeared in *The Ecologist* in September 2005 was a sensationalist piece of journalism designed to scare people about a safe and beneficial food ingredient. At a time when governments and doctors are increasingly concerned about the increase in overweight and obesity, it is perverse that *The Ecologist* should try to alarm people about a food ingredient that can make a useful contribution to helping people control their weight. The Aspartame Information Service has prepared the following point-by-point response to the allegations about aspartame as a service to readers of *The Ecologist*. The original text of the article is shown in italics and the correct information appears below each quote.

*Scientists say aspartame can produce a range of disturbing side-effects in humans including headaches, memory loss, mood swings, seizures, multiple sclerosis and Parkinson's-like symptoms, tumours and even death.*

Contrary to this assertion, there is, in fact, a very high level of consensus amongst scientists that aspartame is safe. Aspartame has been approved by the regulatory authorities in over 100 countries, by the European Food Safety Authority and by its predecessor, the European Commission's Scientific Committee on Food, and by experts of the United Nations Food and Agriculture Organisation and the World Health Organisation.

There is no scientific evidence linking aspartame to adverse reactions. Aspartame is a simple ingredient made from two amino acids, the building blocks of protein that are found in many foods that we eat every day, including milk, grains, meat and vegetables. When we consume aspartame, it is broken down in the digestive system to very small quantities of common dietary components. These components are utilised by the body in the same way as when they are derived from other foods and drinks. Aspartame cannot, therefore, cause adverse effects.

By providing an excellent sweet taste without the calories of sugar, aspartame can make a useful contribution to a healthy, calorie-controlled diet and can therefore help people to avoid overweight and obesity, and their associated diseases.

*Concerns over aspartame's toxicity meant that for eight years, the US Food and Drug Administration (FDA) denied it approval, effectively keeping it off the world market. This caution was based on compelling evidence, brought to light by numerous*

*eminent scientists, litigators and consumer groups, that aspartame contributed to serious central nervous system damage and had been shown to cause cancer in animals.*

The United States Food and Drug Administration did not keep aspartame off the world market. Aspartame was first approved in France in 1979 for use in table top sweeteners and then by the United States Food and Drug Administration (FDA) for use in dry products in 1981. Approval for use in carbonated beverages followed in 1983. In the next thirteen years, the FDA approved aspartame for use in a widening range of food and drink product categories, culminating in the Administration's approval of aspartame as a general purpose sweetener for use in foods and drinks in 1996. At this point the FDA had affirmed the safety of aspartame no fewer than twenty six times. It is self evident that the FDA was presented with no "compelling evidence" that aspartame was in any way unsafe.

Furthermore, in 1987 the General Accounting Office of the United States Congress reviewed the entire process which led to the FDA's 1981 approval of aspartame in dry products and concluded that the Administration had acted properly.

*Dr John Olney...informs Searle that his studies show that aspartic acid, one of the main constituents of aspartame, causes holes in the brains of infant mice.*

Aspartic acid is a non-essential amino acid, which means that, if we do not obtain it from our diet, our bodies make it themselves. Aspartic acid occurs in all protein-containing food. People who regularly choose products sweetened with aspartame obtain more than 98% of their aspartic acid from other dietary sources.

*Drawing on data compiled by the US National Cancer Institute's Surveillance, Epidemiology and End Results programme, which collects and distributes data on all types of cancer, Olney publishes peer-reviewed research in the Journal of Neuropathology and Experimental Neurology. It shows that brain-tumour rates have risen in line with aspartame consumption and that there has been a significant increase in the conversion of less deadly tumours into much more deadly ones.*

This paper has been reviewed and rejected by numerous experts, including the UK Department of Health's Committee on Carcinogenicity, the European Commission's Scientific Committee on Food, and the United States Food and Drug Administration. In response to Olney's study, researchers led

by James Gurney monitored subjects born after 1981 who had been diagnosed with brain tumours, and compared their aspartame consumption to that of healthy children. The study, published in the *Journal of the National Cancer Institute*, rejected Olney's findings and demonstrated that there was no link between aspartame consumption and elevated brain tumour risks. Furthermore, it emerged that Olney had omitted key data from his analysis in order to justify his allegation.

*July 2005: The Ramazzini Institute in Bologna, a non-profit, private institution set up to research the causes of cancer, releases the results of a very large, long-term animal study into aspartame ingestion. Its study shows that aspartame causes lymphomas and leukaemia in female animals fed aspartame at doses around 20mg per kg of body weight, or around half the accepted daily intake for humans.*

The allegation that aspartame is linked to cancer is not supported by the data revealed in the Ramazzini paper. The claim that aspartame caused a higher level of tumours in female rats (but not male rats) is based solely on a comparison with the control group of female rats which had abnormally low levels of tumours. Furthermore, the alleged effect only appears in the female rats when the number of lymphomas and leukemia are combined. It is well known that these diseases have different causes. Combining these symptoms is like combining statistics on hay fever and the common cold and then asserting that they have the same cause.

The European Food Safety Authority (EFSA) undertook a thorough evaluation of the material from the Ramazzini Institute and published its conclusions in May 2006. EFSA identified a number of fundamental flaws in the Ramazzini study and attributed the increased incidence of lymphomas and leukaemias to respiratory disease, rather than aspartame consumption. EFSA concluded that "there is no need to further review the safety of aspartame".

*Of seven monkeys fed aspartame mixed with milk, one dies and five others have grand mal epileptic seizures.*

The study referred to here is over 30 years old. It was poorly conducted and was completed without a control group. When a well-designed, carefully controlled study with infant monkeys was conducted, there were no adverse effects from aspartame.

The Epilepsy Institute of the United States investigated the allegation that aspartame was associated with seizures and

"found aspartame to be safe for people with epilepsy." Dr Richard Reuben, Chairman of The Epilepsy Institute's Professional Advisory Board, stated that he saw "no cause to link aspartame and seizures." Three years after the introduction of aspartame in carbonated beverages, this same Professional Advisory Board "saw no change in seizure patterns or seizure activity of patients over the past three years." In addition, Dr Reuben said "Allegations of a link between aspartame consumption and seizures unnecessarily raises deep concern, anxiety and undue fear for over 2.5 million Americans with epilepsy."

Dr Linda Tollefson of the FDA reported in January 1993, "Since 1986, the FDA has received reports of 265 cases of epileptic seizures temporally associated with the ingestion of aspartame. Information obtained from the complainant's medical records as well as data on consumption patterns do not support the claim that the occurrences of seizures are linked to consumption of aspartame. In addition, two double-blind controlled crossover studies failed to show an association between epileptic seizures in children and adults and the ingestion of aspartame."

*Betty Martini uses the US Freedom of Information Act to force the FDA to release an official list of adverse effects associated with aspartame ingestion. Culled from 10,000 consumer complaints, the list includes four deaths and more than 90 unique symptoms, a majority of which are connected to impaired neurological function. They include: headache, dizziness or problems with balance, mood change, vomiting and nausea, seizures and convulsions, memory loss, tremors, muscle weakness, abdominal pains and cramps, change in vision, diarrhoea, fatigue and weakness, skin rashes, deteriorating vision, joint and musculoskeletal pain.*

Reports of adverse health events related to aspartame consumption have been extensively reviewed by the Centers for Disease Control (CDC) in the United States. An analysis of more than 500 complaints by the CDC found that it was not possible to identify any "specific constellation of symptoms clearly related to aspartame consumption". The United States Food and Drug Administration (FDA) has exhaustively reviewed more than 3,000 such complaints and has come to the same conclusion as the CDC.

*Dr Walton reviewed 165 separate studies published in the preceding 20 years in peer-reviewed journals. Seventy four of the studies were industry-funded, all of which attested to aspartame's safety. Of the other 91 non-industry funded*

*studies, 84 identified adverse health effects. Six of the seven non-industry funded studies that were favourable to aspartame were from the FDA, which has a public record of strong pro-industry bias.*

The table of non-industry funded studies compiled by Dr Walton is neither a complete nor a conscientious review of the extensive body of science that exists on aspartame. It is a selective collection comprising of anecdotes, letters, review articles, brief reports, conference papers, duplicates and a number of studies that do not even refer to aspartame. Of the 91 non-industry funded studies, 10 actually involve aspartate and not aspartame, 18 do not actually draw negative conclusions about aspartame, 13 have not been reviewed by other academics, five are anecdotal, and 19 are letters to medical journals.

Dr Walton's assumption that industry-funded studies are unreliable or biased is equally unfounded. The industry-funded studies confirming the safety of aspartame adhere to the highest scientific standards and have been subjected to peer-review before publication. These studies have also been reviewed and approved many times by independent authorities such as the European Food Safety Agency, experts of the United Nations Food and Agriculture Organisation, the World Health Organisation, and by regulatory agencies in more than 100 countries.

*'Hundreds of thousands of consumers, more likely millions, constantly suffer major reactions to products containing aspartame. Today, every physician probably encounters aspartame disease in everyday practice, especially among patients with illnesses that are undiagnosed or difficult to treat.'*

Dr Roberts provides no scientific basis for this claim. Dr Roberts' work has never been peer-reviewed and his opinions have drawn criticism from many academics as they are without any solid statistical foundation. A recent five year study, funded by the United States National Cancer Institute, evaluated more than 500,000 men and women between the ages of 50 and 69 who consumed aspartame regularly. The report found that consumption of aspartame-sweetened beverages did not cause any adverse effects and confirmed the safety of aspartame.

*'While aspartame manufacturers say aspartame cannot penetrate the blood-brain barrier-the tightly walled membrane that keeps toxins from reaching the brain, Blaylock counters that a number of factors make the blood-brain barrier more porous,*

*including exposure to pesticides, hypoglycaemia, all immune diseases (such as lupus and diabetes), Alzheimer's and Parkinson's, strokes (including silent strokes) and a whole range of medical drugs. Under these conditions, ingesting aspartame-laced foods may cause a spike in the level of excitotoxins that directly reach the brain, thus increasing the likelihood of adverse effects. Each of aspartame's main constituents is a known neurotoxin capable of producing a unique array of adverse effects.*

Aspartame is not a neurotoxin. It is a simple food ingredient made from two amino acids, aspartic acid and phenylalanine. These amino acids, the building blocks of protein are found in many foods that we eat every day including milk, grains, meat and vegetables. In fact, a glass of milk contains eleven times more aspartic acid and five times more phenylalanine than a single can of aspartame-sweetened soft drink. It is unique among artificial sweeteners in that its components are fully metabolised by the body. It cannot, therefore, be responsible for causing any adverse effects.

*Manufacturers argue that the instability of aspartame is irrelevant since its constituents are all found naturally in food. This is only partially true and ignores the fact that in food amino acids like aspartic acid and phenylalanine are bound to proteins, which means that during digestion and metabolism they are released slowly into the body. In aspartame, these amino acids are in an unbound or 'free' form that releases greater amounts of these chemicals into the system much more quickly.*

Aspartame is digested in exactly the same way as other protein-containing foods and does not bring anything new to the diet. In December 2002, the EU Scientific Committee on Food (SCF), together with the UK Food Standards Agency and the French Food Safety Agency, undertook a review of the scientific data on aspartame and concluded:

"Aspartame is unique among the intense sweeteners in that the intake of its component parts can be compared with intakes of the same substances from natural foods."

The review goes on to state that consumption of aspartame represents 'only a minor source' of aspartic acid and phenylalanine in the diet.

*Furthermore, there is evidence that ingesting aspartame, especially along with carbohydrates, can lead to excess levels of phenylalanine in the brain even among those not affected by PKU.*

Phenylalanine is an essential amino acid (that is, an amino acid which our bodies cannot make and so must be obtained from our diet). It is also one of the amino acids which is used to make aspartame. Phenylalanine can be easily metabolised by the body and a glass of milk contains five times more phenylalanine than one aspartame-sweetened beverage. In its review of aspartame conducted in 2002, the SCF found that aspartame does not increase the levels of phenylalanine in the bloodstream above the amount that would normally occur after eating a meal. Phenylketonuria (PKU) is a rare hereditary disorder that affects roughly 1 in 15,000 people and in the UK, babies are tested for the condition shortly after birth. People born with PKU cannot metabolise phenylalanine from any source and need to follow a very strict diet to regulate their intake.

*In animal experiments it has produced brain tumours, uterine polyps and changes in blood cholesterol. Before the FDA approved aspartame, the amount of DKP in our diets was essentially zero. So no claim of DKP's safety can be accepted as genuine until good-quality long-term studies have been performed. No such studies have been done.*

There have been a number of good quality, long-term studies. A study of 860 Wistar rats fed high doses of aspartame and its diketopiperazine (DKP) concluded that there was no difference in the incidence of brain tumours between control and test groups. This year, the results of a large study funded by the United States National Cancer Institute were published. The study, which evaluated over 500,000 men and women between the ages of 50 and 69 over a five-year period, found that there was no link between aspartame consumption and brain tumours. The study provided further confirmation of the findings of a 2005 report, Review of Lymphatic and Hematopoietic Cancer Trends & Consumption of Aspartame, in which researchers, having examined recent cancer trends in the population, found that there was no pattern of tumours that paralleled the rise in aspartame consumption.

*Too much aspartate in the brain produces free radicals, unstable molecules that kill and damage brain cells....Aspartic acid has a cumulative harmful effect on the endocrine and reproductive systems. Several animal experiments have shown that excitotoxins can penetrate the placental barrier and reach the foetus. In addition, as levels of aspartic acid rise in the body so do levels of the key neurotransmitter norepinephrine.*

Aspartic acid is not harmful to the body. It is a non-essential amino acid which means that the body produces it naturally and it plays an important role in several bodily functions. Aspartame is a minor source of aspartic acid as only tiny amounts are required to sweeten foods and drinks. A glass of milk, for example, contains eleven times more aspartic acid than an aspartame-sweetened soft drink. The amount of aspartic acid in the brain is strictly regulated by the blood-brain barrier which is vital in maintaining the correct levels of all amino acids in the brain.

*Methanol (wood alcohol) comprises 10% of aspartame. It is a deadly poison that is liberated from aspartame at temperatures in excess of 86F...even small amounts of aspartame-containing foods can build up over time in the body.*

When we consume aspartame, it is broken down in the digestive system to very small quantities of common dietary components. One of these components is a tiny amount of methanol. There is as much methanol in a banana and more than twice as much in a serving of tomato juice as there is in a soft drink sweetened with aspartame. Traces of methanol also occur naturally in our blood, in our saliva, and on our breath.

*Most studies into aspartame are animal studies...Until the many concerns about it have been examined in 'corporate-neutral', large scale, long term, randomised, double-blind, placebo-controlled human trials (the gold standard of scientific proof) it should be taken out of our food.*

Aspartame is one of the most thoroughly tested ingredients in our food supply. There are hundreds of studies confirming its safety, each adhering to the highest scientific standards. These studies have been peer-reviewed by other leading scientists and academics, as well as by food safety agencies and regulatory bodies all over the world. This website contains an on-line archive of many of these studies, including both human trials and animal studies.