ASPARTAME REACTIONS: A HIDDEN EPIDEMIC

Aspartame has been linked to a host of devastating central nervous system disorders

When aspartame was approved for use, Dr HJ Roberts, director of the Palm Beach Institute for Medical Research, had no reason to doubt the FDA's decision. 'But my attitude changed,' he says, 'after repeatedly encountering serious reactions in my patients that seemed justifiably linked to aspartame.' Twenty years on, Roberts has coined the phrase 'aspartame disease' to describe the wide range of adverse effects he has seen among aspartame-guzzling patients.

He estimates: 'Hundreds of thousands of consumers, more likely millions, currently 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.'

As a guide for other doctors, Roberts, a recognised expert in difficult diagnoses, has published a lengthy series of case studies, *Aspartame Disease: an ignored epidemic* (Sunshine Sentinel Press), in which he meticulously details his treatment of 1,200 aspartame-sensitive individuals, or 'reactors', encountered in his own practice. Following accepted medical procedure for detecting sensitivities to foods, Roberts had his patients remove aspartame from their diets. With nearly two thirds of reactors, symptoms began to improve within days of removing aspartame, and improvements were maintained as long as aspartame was kept out of their diet.

Roberts' case studies parallel much of what was revealed in the FDA's report on adverse reactions to aspartame – that toxicity often reveals itself through central nervous system disorders and compromised immunity. His casework shows that aspartame toxicity can mimic the symptoms of and/or worsen several diseases that fall into these broad categories (see the box above).

Case studies, especially a large series like this, address some of the issues surrounding real-world use in a way that laboratory studies never can; and the conclusions that can be drawn from such observations aren't just startling, they are also potentially highly significant. In fact, Roberts believes that one of the major problems with aspartame research has been the continued over-emphasis on laboratory studies. This has meant that the input of concerned independent physicians and other interested persons, especially consumers, is 'reflexively discounted as "anecdotal"'.

Many of the diseases listed by Roberts fall into the category of medicine's 'mystery diseases' – conditions with no clear aetiology and few effective cures. And while no one is suggesting that aspartame is the single cause of such diseases, Roberts' research suggests that some people diagnosed with, for example, multiple sclerosis, Parkinson's or chronic fatigue syndrome may end up on a regimen of potentially harmful drugs that could have been avoided if they simply stopped ingesting aspartame-laced products.

CONDITIONS MIMICKED BY ASPARTAME TOXICITY

- multiple sclerosis
- Parkinson's disease
- Alzheimer's disease
- fibromyalgia
- arthritis
- multiple chemical sensitivity
- chronic fatigue syndrome
- attention deficit disorder
- panic disorder
- depression and other psychological disorders
- lupus
- diabetes and diabetic complications
- birth defects
- lymphoma
- Lyme disease
- hypothyroidism

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ASPARTAME'S TOXIC CONTENTS

Aspartame is made up of three chemicals: the amino acids aspartic acid and phenylalanine, and methanol. The chemical bond that holds these constituents together is fairly weak. As a result, aspartame readily breaks down into its component parts in a variety of circumstances: in liquids; during prolonged storage; when exposed to heat in excess of 86° Fahrenheit (30° centigrade); and when ingested. These constituents further break down into other toxic by-products, namely formaldehyde, formic acid and aspartylphenylalanine diketopiperazine (DKP).

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. Similarly, the methanol present in natural foods like fruits, for example, is bound to pectin and also has a co-factor, ethanol, to mediate some of its effects. No such chemical 'back-stops' exist in aspartame.

According to neuroscientist Russell Blaylock, the effect of aspartame's breakdown components on brain function is central to its known adverse effects. Like monosodium glutamate (MSG) and L-cysteine, an amino acid found in hydrolysed vegetable protein, aspartame is what is known as an 'excitotoxin' – a chemical transmitter that allows brain cells to communicate. Blaylock has written a book about them, *Excitotoxins: the taste that kills*, and says: 'Even a minute over-concentration of these chemicals causes the brain cells to become so over-excited that they very quickly burn themselves out and die.'

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.

PHENYLALANINE

The essential amino acid phenylalanine comprises 50 per cent of aspartame. In people with the genetic disorder, phenylketonuria (PKU) the liver cannot metabolise phenylalanine, causing it to build up in the blood and tissues. Chronically high levels of phenylalanine and some of its breakdown products can cause significant neurological problems, which is why foods and beverages containing aspartame must carry a warning for PKU sufferers.

But according to Dr HJ Roberts, sensitivity to aspartame is not limited to PKU sufferers. PKU carriers – people who inherited the gene for the disorder but do not themselves have the condition (around 2 per cent of the general population) – are also more prone to adverse effects. In Roberts' data there is also a high incidence of aspartame reactions among the close relatives of patients who cannot tolerate aspartame. 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.

Athough phenylalanine is sometimes used as a treatment for depression, excessive amounts in the brain can cause levels of the mood regulator serotonin to decrease, making depression more serious or likely. Build-up of phenylalanine in the brain can also worsen schizophrenia or make individuals more susceptible to seizures. Moreover, decrease in serotonin levels can result in carbohydrate craving. This could explain aspartame's lack of effectiveness as a diet aid.

DKP

DKP is a breakdown product of phenylalanine that forms when aspartame-containing liquids are stored for prolonged periods. 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.

ASPARTIC ACID

Aspartic acid (also known as aspartate) is a non-essential amino acid that comprises 40 per cent of aspartame. In the brain, it functions as a neurotransmitter – facilitating the transfer of information from one nerve cell (neuron) to another. Both human and animal experiments have demonstrated

a significant spike in blood-plasma levels of aspartate after the administration of aspartame in liquids. Too much aspartate in the brain produces free radicals, unstable molecules that damage and kill brain cells.

Humans are five times more sensitive to the effects of aspartic acid (as well as glutamic acid, found in MSG) than rodents, and 20 times more sensitive than monkeys, because we concentrate these excitatory amino acids in our blood at much higher levels and for a longer period of time. 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 (also known as noradrenaline), a 'stress hormone' that affects parts of the human brain where attention and impulsivity are controlled. Excessive norepinephrine is associated with symptoms such as anxiety, agitation and mania.

METHANOL

Methanol (wood alcohol) comprises 10 per cent of aspartame. It is a deadly poison that is liberated from aspartame at temperatures in excess of 86° Fahrenheit (30° centigrade) – for instance, during storage or inside the human body. The US Environmental Protection Agency considers methanol a 'cumulative poison due to the low rate of excretion once it is absorbed', meaning that even small amounts in aspartame-containing foods can build up over time in the body.

The most well known problems from methanol poisoning are vision disorders, including misty or blurry vision, retinal damage and blindness. Other symptoms include headaches, tinnitus, dizziness, nausea, gastrointestinal disturbances, weakness, vertigo, chills, memory lapses, numbness and shooting pains in the extremities behavioural disturbances, and neuritis.

The EPA tightly controls methanol exposure, allowing only very minute levels to be present in foods or in environmental exposures. But Blaylock says: 'The level allowed in NutraSweet is seven times the amount that the EPA will allow anyone else to use.'

FORMALDEHYDE

The methanol absorbed from aspartame is converted to formaldehyde in the liver. Formaldehyde is a neurotoxin and known carcinogen. It causes retinal damage and birth defects, interferes with DNA replication, and has been shown to cause squamous-cell carcinoma, a form of skin cancer, in animals. Several human studies have found that chronic, low-level formaldehyde exposure has been linked with a variety of symptoms, including headaches, fatigue, chest tightness, dizziness, nausea, poor concentration and seizures.

FORMIC ACID

Formic acid is a cumulative poison produced by the breakdown of formaldehyde. It concentrates in the brain, kidneys, spinal fluid and other organs, and is highly toxic to cells. Formic acid can lead to accumulation of excessive acid in the body fluids – a condition known as acidosis. The small amounts of formic acid derived from the methanol absorbed from aspartame may or may not be dangerous; there are no human or mammalian studies to enlighten us.

TIME FOR ACTION

The story of aspartame is the story of the triumph of corporate might over scientific rigour. It shines a spotlight on the archaic and unbalanced procedure for approving food additives.

We ingest food additives daily, yet their approval does not require the same scientific thoroughness as drug approval; and, unlike drugs, there is no requirement for surveillance of adverse effects that crop up once the additive is in use.

Approval does not involve looking at what people are already eating and whether the proposed substance will interact with other additives. Nor does it take into account whether the additive exacerbates damage caused by other aspects of the modern lifestyle (for instance, the neurological damage caused by pesticide ingestion or exposure). Nor does it look for subtle chronic effects (for instance, the gradual build-up of methanol in the body with regular aspartame ingestion).

There are other problems. Most studies into aspartame are animal studies, which are notoriously difficult to relate to humans. So why bother performing them in the first place? The answer is, manufacturers and regulators use animal research as a double-edged sword. If an animal study reveals no evidence of harm, the manufacturer can use it to support its case. If it reveals harm, however, the manufacturer is free to flip-flop into the argument that the results of animal studies are inconclusive in relation to humans. Faced with inconclusive evidence regulators will always err on the side of the manufacturer, who has after all demonstrated proper bureaucratic procedure by funding and submitting its animal tests for consideration.

The approval process for any substance that humans put in their mouths on a daily basis should be based on solid human data and on the precautionary principle when such data is not available. But, as it stands, the regulation of food additives in the US, the UK and elsewhere leaves the burden of proof of harm on average people, despite the fact that most of us are either too detached or too timid to complain or simply don't have the energy to take on multinational corporations.

The history of aspartame is all the more remarkable because of the number of motivated people who have refused to accept the mantra 'if it's approved by the government it must be safe'. Nearly every piece of independent research shows the outrage of these people, who have had to withstand threats of litigation and being vilified in the media as 'hysterics', is justified.

After 30 years of aspartame's commercial success, it would be easy to conclude it is too late to act. And yet earlier this year hundreds of products were swept off supermarket shelves on the chance that they might have contained minuscule amounts of a potentially carcinogenic dye, Sudan 1. No studies existed to show that Sudan 1 *could* cause cancer in humans. The likelihood of any one person's exposure to Sudan 1 being high enough to produce a tumour was minute. Nevertheless, on the basis of the precautionary principle, action was taken.

Aspartame is not a life-saving drug. It is not even a very effective diet aid, as shown by widespread obesity in the West. 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.

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