



THE research behind ASPARTAME

» Aspartame By Dr K P Stoller

Continuing our series investigating the artificial sweetener aspartame, and in response to our inbox reply from Donnell Alexander, – advisor to Coca-Cola – Dr KP Stoller reviews the research and how industry-funded studies conclude that the chemical is safe

In 2007, a review of aspartame entitled *Aspartame: A Safety Evaluation Based on Current Levels, Regulations, and Toxicological and Epidemiological Studies* (Magnuson 2007) appeared in the scientific journal *Critical Reviews in Toxicology*. Shortly after its publication, a flurry of press releases proclaimed how this was the most comprehensive review ever conducted; and how it once again concluded that the world's most widely used sugar substitute was safe, even among its heaviest users and across all population groups.

It was never mentioned that the review was funded by the manufacturer of aspartame, that the authors had serious conflicts of interests, and that it misrepresented research and omitted important information. So, how do these toxic products manage to get presented in such a positive – and inaccurate – light?

CONFLICT OF INTEREST

The review was funded by Ajinomoto of Japan – the world's biggest producer and seller of aspartame – yet this information was apparently not disclosed to the journal in which it was published. In fact, the parent company of the journal stated in a press release that: "There were no known conflicts of interest with the sponsor or potential biases of the authors" (Informa 2007).

One of the review authors, Gary M. Williams, was chairman of the American Health Foundation (AHF), funded in part by The NutraSweet Company and other firms selling aspartame-containing products (Williams 1987). Both he and another author, Robert Kroes, had previously joined with Ian C. Munro – president of the Cantox Health Sciences International corporate advocacy group, now called Intrinsic – to work with Monsanto in representing its herbicide, glyphosate (Williams 2000). This connection with Monsanto was not disclosed in the aspartame review either, despite the fact that the company now owns the rights to aspartame.

Bernadene Magnuson, the review's lead author, was also the senior scientific and regulatory consultant for Cantox, which had already roundly declared aspartame toxicity a "non-issue". Neither this relationship, nor the fact that she was a member of corporate advocacy agency The Burdock Group, were disclosed in the research paper.

Moving on down the list, author Gary Marsh has previously had research funded by the Formaldehyde Institute, a trade association consisting of Monsanto, Dupont and other chemical companies (CSPI 2008a, Tataryn 1983). The idea behind this body is to raise money for research that portrays formaldehyde exposure in a good light. Since independent studies have shown that

aspartame ingestion leads to formaldehyde accumulation in the brain, kidneys, liver and other organs and tissues (Trocho 1998), this connection should surely have been disclosed in the review... but it wasn't.

Author Michael Pariza has held the role of scientific advisor to the industry-funded advocacy group American Council on Science & Health (ACSH). He is also on the board of trustees of the International Life Sciences Institute (ILSI). This is a chemical and food company research association funded by Ajinomoto, Monsanto, Coca-Cola, PepsiCo, Nestlé, and many other industry players involved in the production, use and sale of aspartame (Nutrition 2003, CSPI 2008b, ILSI 2005). Again, these connections were not mentioned in the review.

Ronald Walker, another author, spent seven years as chairman of the ILSI's scientific committee on toxicology/food safety in Europe. He has also been employed as a consultant by DSM Nutritional Products, a firm that sold the Holland Sweetener Company's Twinsweet, which is a combination of aspartame and acesulfame-k. In addition, he has consulted for Ajinomoto joint venture partner Numico Beheer BV / Danone Group; corporate public relations business The European Food Information Council; and Cantox Health Sciences International (Walker 2005).

Ironically, Walker has previously written a glowing review of another Ajinomoto product, monosodium glutamate (MSG), for a symposium funded by an Ajinomoto-managed trade group called the International Glutamate Technical Committee (IGTC) (Walker 2000, Ishii 2003). He has also participated in another aspartame paper, where he again claimed the chemical was safe (SCF 2002). You'd think all of this might have been mentioned, but no.

Finally, author John Doull has consulted in

the past to Monsanto, has been a member of the Monsanto-funded ACSH Advisory Board, and was also a trustee of ILSI (Tobacco 1993, CSPI 2008). Again, there's no word of any of this in the review.

So, is it possible for a review of aspartame – funded by Ajinomoto and written by people who have worked for Monsanto; trade and research associations funded by Monsanto, Ajinomoto, Coca Cola, PepsiCo, etc; corporate advocacy groups, one of which has already called aspartame toxicity a “nonissue”; and companies that sell aspartame – to deliver unbiased results? You've got to be kidding!

MISREPRESENTING THE RESEARCH

It is extremely common for reviews funded by manufacturers of unhealthy or toxic products to misrepresent the existing research, so as to promote their goods amongst medical professionals. What's more, it is becoming more common for manufacturers and trade associations to use corporate advocacy groups to hand-pick researchers to play with the facts on their behalf.

As a result, not only do such reviews contribute to continued exposure of the general public to toxic products such as aspartame, but medical professionals who do not have the time to check all the references for accuracy also end up being duped into thinking a poisonous product is safe. So, how does this apply to the review in question?

More than 10 years ago, independent research out of Europe demonstrated that aspartame ingestion at relatively low levels leads to the accumulation of formaldehyde adducts – generated from methanol in the product – bound to protein in the liver, kidneys, brain, and other organs and tissues (Trocho 1997). This published,

peer-reviewed, independent study was not even so much as mentioned in the review, underlining one of the key techniques when it comes to misrepresenting research – avoid mentioning it altogether.

Another common tack has been to convince the market that the methanol obtained from aspartame and then converted into formaldehyde in the body does not increase methanol levels in the blood plasma. To this end, Table 25 on page 692 of the Magnuson (2007) review purports to show several studies where plasma methanol levels did not rise, except for when very large doses of aspartame were ingested (Stegink 1981, Stegink 1983, Stegink 1989).

What it doesn't say – but is shown in the research – is that these industry-sponsored studies used an extremely old methanol measuring technique from 1969 (Baker 1969). This would not be able to detect any plasma methanol increase until it went up by 500-600%! In fact, modern testing shows that relatively small amounts of aspartame can cause a doubling of plasma methanol levels (Davoli 1986). The fact that the Magnuson (2007) reviewers did not mention any of this shows that they are either not familiar with the research or that they are knowingly keeping crucial information from readers.

Yet another way for reviewers to convince the public that the methanol from aspartame is not a problem is to compare the methanol levels in the chemical to that in fruits and other products. For example, the reviewers state: “Similarly, Butchko and Kotsonis (1991) estimated that tomato juice provides about six times as much methanol as an equivalent volume of an aspartame-sweetened beverage.In conclusion, the amount of methanol contributed to the diet from aspartame-containing product consumption is likely to be less than that

from natural sources”.

That particular argument was largely addressed in a 1984 independent study by Dr Woodrow Monte, entitled *Aspartame: Methanol and the Public Health* (Monte 1984). He pointed out that there are protective factors in traditionally ingested foods and drinks that contain methanol. For example, wine has high levels of methanol, but it also has high levels of ethanol. This blocks the conversion of methanol into formaldehyde, so that the methanol can be eliminated safely in the urine and breath (Leaf 1952, Liesivuori 1991, Roe 1982). Fruits also contain protective factors that prevent the conversion of methanol into formaldehyde.

The manufacturer at the time was sufficiently concerned about the debunking of its argument related to aspartame, methanol and fruit that it wrote a public letter in 1985, attempting to address Dr. Monte's arguments (Sturtevant 1985). However, our reviewers cite neither that letter nor Dr. Monte's work. Again, are they biased or are they simply unaware of the scientific literature?

Leaving out important factors in a study is another way in which research can be misrepresented. For instance, section 6.9.2.4 of the Magnuson (2007) review, headed *Effect of Aspartame on Seizures*, on page 696, cites two industry-funded, double-blind studies (Shaywitz 1994, Rowan 1995). The way this data is presented, the reader gets the sense that a large amount of aspartame will not cause seizures, even in people who are so predisposed. It fails to point out, though, that nearly all of the subjects in those studies were taking anti-seizure medication. Of course, they're unlikely to have seizures!

In addition, the reviewers simply omitted the fact that the aspartame used in those two studies is – according to industry

consultants – not actually bioequivalent to the aspartame taken in real-world products (Stegink 1987a). Instead, it was given in slow-dissolving capsules, tremendously reducing the biochemical changes that normally occur in real-world aspartame ingestion. Instead, methanol absorption slows significantly, allowing the body to eliminate more before it is transformed into formaldehyde. The absorption of the excitotoxic amino acid is also slowed, so that the liver can prevent the sudden spike in plasma levels normally seen when aspartame is ingested in liquids (Stegink 1987a, 1987b).

Basing their findings on short studies or on those that use few subjects – or subjects chosen for specific qualities – is another way in which reviewers can skew their results. For example, the two industry studies mentioned above were one day (Rowan 1995) and two weeks long (Shaywitz 1994). How many adverse reactions are going to turn up in such short timeframes? In contrast, Roberts (1988) looked at 551 cases of reported aspartame toxicity and showed that reactions to the chemical could appear at any time, ranging from immediately to more than a year after initial use began.

And what about the technique of

splitting any adverse effects of aspartame that might emerge into such small categories that they do become statistically negligible? In illustration, the Magnuson (2007) review describes an industry-sponsored study by Leon (1989), where aspartame or a placebo was given to healthy adults for 24 weeks.

“The results indicated no differences between the groups in body weight, vital signs, blood lipid levels, urinalysis results, or incidence of complaints,” says the paper.

What the reviewers didn’t mention is that there were approximately 50 percent more adverse reactions in the aspartame group than in the placebo group. However, because the researchers had split these into a total of 14 smaller subcategories, the reviewers could claim that within each of these tiny groups there was no “statistically significant” increase in aspartame reactions.

CONCLUSION

It can be seen, then, that much of the Magnuson (2007) review contains results based on misrepresented research or simply prefers not to mention crucial pieces of information. Is this the kind of study you’d want to base your aspartame choices on? «

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For a complete list of references for this article contact subs@fitnesslife.co.nz.

Re: The research behind aspartame letter published in issue 40 of *Fitness Life* magazine.

The extensive and independent review process on the safety of aspartame, which was chaired by Dr Magnuson and published in *Critical Reviews in Toxicology*, cited more than 500 studies, including both industry-funded and non-industry-funded research. The conclusions of this review clearly state that aspartame has been shown to be safe to ingest at current levels of consumption.

The point not made clear, perhaps, in Dr Magnuson's *Close Up* interview was that regardless of the funding source, the most important factor in any study into aspartame safety is the quality of the research undertaken. Adequate safety testing of food ingredients must follow strict quality guidelines set by independent authorities, and all industry-funded studies follow these principles. It is in their interest to do so, so as to avoid bias and subjectivity. This is not always the case for non-industry-funded research. You may find it helpful to listen to Dr Magnuson objectively answering some commonly asked questions on aspartame at the following link, as it addresses other misconceptions about aspartame also covered in your magazine during the past year. You can find the interview at: http://www.gettherealfacts.co.nz/bernadene_qanda.html

I act as a consultant dietitian to Coca-

Cola Oceania. As a NZ-registered dietitian, I have a professional and ethical obligation to uphold what is scientifically accepted as fact, and to correct misinformation regarding dietary matters. I'm therefore not defending aspartame simply because I advise Coca-Cola.

Obviously, Coca-Cola uses aspartame in some of its products, but it takes the health of its consumers and all New Zealanders extremely seriously. If there were even a trace of scientific evidence to show any ingredient to be unsafe, it would not use it. And the reverse is actually true for aspartame. It has not only been shown to be safe – as a result of hundreds of studies – but has also shown to be beneficial, especially for weight management and management of diabetes.

Donnell Alexander
NZ registered dietitian

For a detailed response to this letter see page 42

Dr Woodrow Monte replies in brief:

If you are concerned about the health and wellbeing of you and your family, it is best to stay alert and seek the best advice available. I found over the many years that I taught as a research professor in the States that there are indeed times when a perfectly good food or food additive is unjustifiably maligned in the popular press or even by well-meaning scientists. However, I absolutely do not believe this to be

the case when it comes to aspartame.

My entire professional career has been devoted to studying and evaluating food ingredients for use in healthcare formulations such as hospital tube feedings and the like. My standards are high, given that the wellbeing of the end-user of these complex foods can be too easily compromised. The point is that I am eminently qualified to research the chemistry and toxicology of these ingredients.

Another important point that must be raised is bias. I do not work for any food company – I am, in fact, now retired. Therefore, my allegiance is to the facts and the facts alone. My concerns are for the public health, and – more specifically – for the health of my friends and students.

At my age and with my limited resources, I must pick my battles carefully. So, when I say that the methanol contained in diet soda is dangerous, I believe it is so, based on years of experience in the industry.

This methanol is a direct by-product of artificial sweetener 951 – aspartame. And there is no safe level of consumption of methanol, as there is with other less poisonous substances that can occasionally find their way into our foods.

This is because methanol is particularly dangerous to humans. When we consume low doses of methanol, it is metabolised directly into formaldehyde,

which is a cancer-producing agent on the same level as asbestos and plutonium. This conversion does not all happen in the liver – as is commonly thought – but also takes place in the brain and in a woman's breast. It is therefore my belief that aspartame has contributed to the significant rise in breast cancer and multiple sclerosis in every society that has allowed its use as a food ingredient.

What can we do to protect our families? Remove diet products containing aspartame from our homes and our schools.

Kindest regards

Woodrow C. Monte Ph.D.
Professor of Food Science and
director of the Dietetics Program
(retired)

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SUPPORT NETWORK

I wish to add my support to the idea of all products containing aspartame having to carry a clear health warning! It is the individual's basic right to choose what we are putting into our own body. That is a right that should be respected by all producers of consumables.

Thank you for printing this article and exposing the dangers I am already well aware of.

Kathryn Burke, via email