FOOD INTOLERANCE NETWORK FACTSHEET

Sweeteners: sugar free and artificial

1. Sugar free sweeteners: the Polyols

2. Artificial sweeteners: Aspartame 951, Acesulfame 950 and others

1. Sugar free sweeteners: the Polyols

Introduction

How safe are sugar free products? Some food scientists regard them as the new generation junk foods. Sugar free and artificial sweeteners can be found in many products including drinks, yoghurts, sweets and medications. Sugar free sweeteners can have a laxative effect in large doses or in sensitive consumers, and have been associated with a misdiagnosis of Irritable Bowel Syndrome. We don't recommend them, see Reader reports below.

Polyols are so called because their name often ends in –ol:

420 Sorbitol
421 Mannitol
953 Isomalt
965 Maltitol or hydrogenated glucose syrup
966 Lactitol
967 Xylitol
968 Erythritol
1200 Polydextrose

Food but not medicine regulations require these additives to carry a warning label **'Excessive consumption may have a laxative effect'**, but as with other additives, consumers can be unaware of the cause of their problems because they:

- don’t make the connection if symptoms occur more than 30 minutes after ingestion, whereas symptoms may be hours later
- don't regard sudden diarrhoea, excruciating stomach cramps, massive bloating or gas as ‘a laxative effect’
- don't regard one stick of chewing gum or one candy bar as ‘excessive consumption’
- don’t regard chewing gum as food (‘I didn’t swallow it’).

Reader reports

[386] Effects of ‘sugar-free” polyols (January 2006)

1) A few months ago I started chewing sugar free chewing gum several times a day and since then, my stomach has been almost continuously bloated. On occasions the amount of gas in my stomach is so extreme that I have to force myself to burp to relieve the pressure in my stomach - Male, 30s, Australia, sorbitol and maltitol, twice daily.

2) I was suffering with a sort of what I thought was "gastritis", causing extreme obnoxious embarrassing gas and bloating, and after an hour or two, constant gas every 10 minutes for hours and hours .... it was so bad I wanted to run away from myself, I know that’s funny but it was quite disgusting, the doctors told me I had a spastic colon but I noticed the "health" food candy bars I thought were healthy had sorbitol and my stomach feels perfect since I've been reading the labels and staying away from the sorbitol - Female, 30s, USA, sorbitol, daily

3) I ate 5 caramels that I thought were safe because they were free of artificial colours and other additives. A few hours later I had excruciating stomach pains and sudden diarrhea – Female, 40s, Australia, maltitol, one serve

Scientific references

Bauditz J and others. Severe weight loss caused by chewing gum. BMJ. 2008;336(7635):96-7.

Chronic diarrhoea, abdominal pain and severe weight loss due to sorbitol (420) sugar free sweetener was described in two cases of sorbitol intolerance: a 21 year-old woman who chewed large amounts of sugar-free gum, giving an approximate daily dose of 18-20g sorbitol, and a 46 year-old man who consumed large amounts of sugar-free gum and sweets, giving an average daily dose of around 30g sorbitol. Both reported chronic diarrhoea, abdominal pain and severe weight loss. Normal bowel movements were resumed and the patients gained weight after starting a sorbitol-free diet. ‘As possible side effects are usually found only within the small print on foods containing sorbitol, consumers may be unaware of its laxative effects and fail to recognise a link with their gastrointestinal problems,’ the authors warned.
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2190242/?tool=pubmed

Breitenbach RA, Simon J, Cases from the aerospace medicine resident teaching file. Case #59. A case of "unbearable" gremlinenteritis, Aviat Space Environ Med, 1994;65(5):432-3.

A flight surgeon presents with severe diarrhea of sudden onset.The unusual cause could be traced to sorbitol, a common sweetener that is widely available and could easily affect many aviators. The symptoms are exacerbated in the aerospace environment and close investigation of the dietary history may be the only clue to this elusive diagnosis. This case appeared on House MD, season 2.

Jain NK AND OTHERS, Sorbitol intolerance in adults, Am J Gastroenterol. 1985;80(9):678-81.

Sorbitol is a commonly used sugar substitute in "sugar-free" food products. Although sorbitol intolerance manifested by abdominal pain, bloating, and diarrhea has been observed in children, it has not been well documented in adults. Forty-two healthy adults (23 whites, 19 nonwhites) participated in this study. After ingestion of 10 g of sorbitol solution, end expiratory breath samples were collected at 15-min intervals for 4 h and analyzed for H2 concentration. Clinical sorbitol intolerance was detected in 43% of the whites and 55% of the nonwhites, the difference not being statistically significant. However, severe clinical sorbitol intolerance was significantly more prevalent in nonwhites (32%) as compared to whites (4%). There was a good correlation between the severity of symptoms and the amount of hydrogen exhaled. Dietetic foods, many of them containing sorbitol, are very popular with diabetics and "weight watchers." Based on our observations, we believe that a large number of adults could be suffering from sorbitol-induced nonspecific abdominal symptoms and diarrhea. These symptoms could lead to an extensive diagnostic work-up and lifelong diagnosis of irritable bowel syndrome.

Hill RE and Kamath KR, "Pink" diarrhoea: osmotic diarrhoea from a sorbitol-containing vitamin C supplement. , Med J Aust, 1982;1(9):387-9,

Sorbitol was the sole cause of protracted diarrhoea in seven children seen in two paediatric-gastroenterology outpatient departments. The sorbitol had been administered in the form of a vitamin C supplement in all seven children. Pink staining of napkins was a prominent feature in five of these seven patients, and was attributed to the cochineal dye contained in the vitamin C supplement. In children with chronic or intermittent watery diarrhoea, a careful dietary history should be obtained. If sorbitol ingestion is documented, a trial of sorbitol exclusion is recommended before embarking on extensive investigations.

The FDA Petition

The Centre for Science in the Public Interest has petitioned the FDA about the potential adverse health effects of eating too much sorbitol, and the special danger posed to children, and have requested that the label be changed to: ‘this product contains [name of polyol], which may cause diarrhoea, bloating, and abdominal pain. Not suitable for consumption by children. To protect yourself, start by eating no more than one serving at a time’. You can read the full petition including medical references at Jacobson MF, Petition to the U.S. Food and Drug Administration for Regulatory Action to Revise the Labeling Requirements for Foods Containing Sorbitol, Center for Science in the Public Interest, September 27, 1999
www.cspinet.org/foodsafety/labeling_sorbitol.html

2. Artificial sweeteners

Introduction

Artificial sweeteners can be found in many products including drinks, yoghurts, sweets and medications. The safety of artificial sweeteners aspartame (951) or acesulfame–K (950) has not been proven in the view of independent scientists. Also, there have been reports of addiction. We don’t recommend them except for diabetics - in limited quantities – and even then, we recommend caution, see especially reader report [388].

950 Acesulphame-K

951 Aspartame (Nutrasweet, Equal)

952 Cyclamates

954 Saccharin

955 Sucralose

The safety of aspartame (sweetener 951) and acesulphame K (sweetener 950)

The main concern about aspartame is that it wasn't tested enough before approval – some scientists suggest that 'lifelong consumption of aspartame probably increases the risk of cancer'. As well there are some concerns about possible neurological problems.

There are two types of aspartame research: industry funded researchers – and food regulators - say it is safe; independent researchers say it is not.

The University of Ohio study found that people with a history of depression were more likely to experience adverse reactions – such as dizziness or headache – than people without mood disorders. Unfortunately, this study was stopped after two subjects suffered serious eye problems including a retinal detachment.

I am concerned by the number of highly placed scientists who have spoken out about the cancer risks of artificial sweeteners after they have left their government paid jobs. That suggests to me that government employees may not protecting the public.

Researchers at the Ramazzini Institute for Cancer Research in Italy claim their study shows that aspartame causes lymphomas and leukaemia in female laboratory rats "at doses very close to the acceptable daily intake for humans". The authors of the study also say that while rats fed aspartame ate less food, there was no difference in body weight between treated and untreated animals. http://www.foodproductiondaily.com/news/printNewsBis.asp?id=64231

A summary of safety concerns from www.AdditiveAlert.com.au

950 Acesulphame-K: caused cancer and tumours in animal tests

951 Aspartame (Nutrasweet, Equal): linked to many health problems including headaches, seizures and brain tumours. The FDA has received more complaints about aspartame than any other food additive

952 Cyclamates: suspected carcinogen banned in the UK and USA in 1970 but still permitted in Australia

954 Saccharin: linked to bladder and reproductive cancers banned in the USA in 1977 but reinstated with strict labelling provisions

955 Sucralose: caused kidney and liver damage in tests, more research needed

Reader reports

Aspartame Addiction

You can see the video story called Aspartame Addiction at www.todaytonightadelaide.com.au (scroll down the left hand "Story" column)

[388] Blackouts from aspartame (March 2006)

I just wanted to tell you about the effects of aspartame on my insulin dependent father in-law. He has drunk at least a can of diet soft drink every day for the last 10 yrs since becoming diabetic, thinking he was doing the right thing. But about 12 months ago he started having regular blackouts every few months or so. He is 6ft 5in and a very big man so when he falls there is a lot of room for damage of some description. The last blackout on his veranda whilst sitting on a chair putting on his boots resulted in a badly dislocated shoulder with permanent damage. He no longer drinks diet drinks after I researched and found some absolutely shocking information linking aspartame to blackouts and has not had a blackout in over 12 months. Aspartame is definitely not recommended for diabetics and no-one should ingest this poison. The alarming thing is I have recently found it in salad dressing and things kids would eat. It's also in most low fat products. - Simonne, by email

[389] Aspartame made me very sick (March 2006)

I have been unwell for a few years with many mysterious and varied complaints. I experienced a bout of Optic Neuritis in March 2004. I was hospitalised with a possible MS diagnosis. It's a long story but I was researching a link between my maladies and a toxin as a possible cause of my health complaints when I came across aspartame and its numerous effects on health. My problems I believe can be related to the vast quantities of Diet Coke I was drinking, 1.25 litres every second day and I was addicted to this stuff. Diet coke was my preferred drink. I also had lots of sugarfree chewing gum, pocket breath strips, diet foods etc. Coke and Wrigley say its safe because FSANZ say it is. I deleted aspartame from my diet in Sept 2004 and my symptoms have gone or abated at the least. I was put on a nasty anti-depressant as well back in March so life was a struggle. I have avoided all aspartame since Sept 2004 and got off the anti-depressant in Nov 2004 and am slowly feeling like my old self. I know aspartame did terrible things to me and I hope I have not suffered permanent damage. I fear for our kids. - Andrea, by email

Scientific references

Walton RG and others, Adverse reactions to aspartame: double-blind challenge in patients from a vulnerable population. Biol Psychiatry. 1993 Jul 1-15;34(1-2):13-7.

Abstract: This study was designed to ascertain whether individuals with mood disorders are particularly vulnerable to adverse effects of aspartame. Although the protocol required the recruitment of 40 patients with unipolar depression and a similar number of individuals without a psychiatric history, the project was halted by the Institutional Review Board after a total of 13 individuals had completed the study because of the severity of reactions within the group of patients with a history of depression. In a crossover design, subjects received aspartame 30 mg/kg/day or placebo for 7 days. Despite the small n, there was a significant difference between aspartame and placebo in number and severity of symptoms for patients with a history of depression, whereas for individuals without such a history there was not. We conclude that individuals with mood disorders are particularly sensitive to this artificial sweetener and its use in this population should be discouraged.
http://thetruthaboutstuff.com/pdf/%2854%29%20Walton%20-%20Double-Blind%20Adverse%20Reactions%20to%20Aspartame.pdf

Soffritti M, and others Aspartame administered in feed, beginning prenatally through life span, induces cancers of the liver and lung in male Swiss mice. Am J Ind Med. 2010 Dec;53(12):1197-206. Ramazzini Institute

BACKGROUND: Aspartame (APM) is a well-known intense artificial sweetener used in more than 6,000 products. Among the major users of aspartame are children and women of childbearing age. In previous lifespan experiments conducted on Sprague-Dawley rats we have shown that APM is a carcinogenic agent in multiple sites and that its effects are increased when exposure starts from prenatal life.
OBJECTIVE: The aim of this study is to evaluate the potential of APM to induce carcinogenic effects in mice.
METHODS: Six groups of 62-122 male and female Swiss mice were treated with APM in feed at doses of 32,000, 16,000, 8,000, 2,000, or 0 ppm from prenatal life (12 days of gestation) until death. At death each animal underwent complete necropsy and all tissues and organs of all animals in the experiment were microscopically examined.
RESULTS: APM in our experimental conditions induces in males a significant dose-related increased incidence of hepatocellular carcinomas ($P < 0.01$), and a significant increase at the dose levels of 32,000 ppm ($P<0.01$) and 16,000 ppm ($P<0.05$). Moreover, the results show a significant dose-related increased incidence of alveolar/bronchiolar carcinomas in males ($P<0.05$), and a significant increase at 32,000 ppm ($P<0.05$).
CONCLUSIONS: The results of the present study confirm that APM is a carcinogenic agent in multiple sites in rodents, and that this effect is induced in two species, rats (males and females) and mice (males). No carcinogenic effects were observed in female mice. Am. J. Ind. Med. 53:1197-1206, 2010.

Increasing brain tumor rates: is there a link to aspartame?

Olney JW, Farber NB, Spitznagel E, Robins LN, J Neuropathol Exp Neurol. 1996;55(11):1115-23.

In the past two decades brain tumor rates have risen in several industrialized countries, including the United States. During this time, brain tumor data have been gathered by the National Cancer Institute from catchment areas representing 10% of the United States population. In the present study, we analyzed these data from 1975 to 1992 and found that the brain tumor increases in the United States occurred in two distinct phases, an early modest increase that may primarily reflect improved diagnostic technology, and a more recent sustained increase in the incidence and shift toward greater malignancy that must be explained by some other factor(s). Compared to other environmental factors putatively linked to brain tumors, the artificial sweetener aspartame is a promising candidate to explain the recent increase in incidence and degree of malignancy of brain tumors. Evidence potentially implicating aspartame includes an early animal study revealing an exceedingly high incidence of brain tumors in aspartame-fed rats compared to no brain tumors in concurrent controls, the recent finding that the aspartame molecule has mutagenic potential, and the close temporal association (aspartame was introduced into US food and beverage markets several years prior to the sharp increase in brain tumor incidence and malignancy). We conclude that there is need for reassessing the carcinogenic potential of aspartame.

Sample quotes from cancer experts letters on acesulfame testing from www.cspi.org

- "These data do not permit an assessment that use of this compound would provide a reasonable certainty of no harm. In fact, there are indications that it might be carcinogenic. I would strongly suggest that a properly designed long term study in both mice and rats be conducted before Acesulfame K be considered for approval." -- David Rall, M.D., Ph.D. Assistant Surgeon General, United States Public Health Service (retired). Former director, United States National Institute of Environmental Health Sciences (NIEHS/NIH). Former director, United States National Toxicology Program (NTP).
- "There are several serious flaws in the design and conduct of the tests.... The only conclusion one can draw from looking at the available results is that acesulfame should be tested in a proper way before an evaluation of its carcinogenicity can be made." --

Lorenzo Tomatis, M.D. Former director, International Agency for Research on Cancer (IARC), a World Health Organization agency.

- "These studies are inadequate to assess the carcinogenic potential of the compound. In the face of inadequate study design and conduct, which would tend to obscure a carcinogenic effect if it were there, nevertheless there was at least equivocal evidence for carcinogenic activity in several studies." -- Franklin E. Mirer, Ph.D. Director, Health and Safety Department, United Automobile Workers. Member of the Board of Scientific Counselors of the National Toxicology Program (NTP).
- "In view of the intended very wide use of acesulfame for the general population, I agree that well conducted, rigorous bioassays should be performed. Reading the reports of the tests on acesulfame brought back to me the 'flavor' of the bad testing practices that were common in those years, such as the use of poorly defined animal colonies, diffuse respiratory infections, lack of randomization in the assignment of the animals, limited sampling for histopathology, uncertainties as to what was the appropriate dose range to be tested, high background incidences of various tumors. I believe that now -- twenty years later -- such poor quality tests should not be considered as acceptable evidence for an important public health evaluation...." -- Umberto Saffiotti, M.D. Chief, Laboratory of Experimental Pathology, National Cancer Institute, Bethesda, Maryland. (Personal views do not represent the National Cancer Institute.)
- "I find the actual studies and the data analysis seriously flawed. New tests, properly designed, executed, and analyzed are needed. The usual consequences of poor tests is to make it harder to find any effects. Despite the low quality of the studies reported to you, I find that there is evidence of carcinogenicity." -- Marvin Schneiderman, Ph.D. Former Associate Director of Field Studies and Statistics at the National Cancer Institute.
- "...(T)he available data on this compound is at best incomplete.... Because of the widespread consumption of 'diet' colas in the U.S., I concur with your position that FDA should require comprehensive testing prior to granting this additional use. The data on carcinogenicity are not negative.... (T)he findings are consistent with potential carcinogenicity." -- Ellen K. Silbergeld, Ph.D. Professor of Epidemiology and Toxicology, University of Maryland at Baltimore. Former member, Board of Scientific Counselors of the National Toxicology Program (NTP).
- "We agree with your proposal to suggest more modern carcinogenicity tests on acesulfame K and acetoacetamide prior to the widespread use of this sweetener." -- J.D. Wilbourn Acting Chief, Unit of Carcinogen Identification and Evaluation, International Agency for Research on Cancer, a World Health Organization agency.
- "...(I)t is clear that questions arising in earlier -- extremely inadequate -- studies about the additive's cancer-causing properties have not been resolved.... Given the likelihood that millions of Americans would be exposed to acesulfame were the additive to be approved for beverage use, the questions about its carcinogenicity must be resolved before a scientifically supportable regulatory decision can be made." -- Sidney M. Wolfe, M.D. Director, Public Citizen's Health Research Group. Former member of the NCI Carcinogenicity Clearinghouse.

www.fedupwithfoodadditives.info

The information given is not intended as medical advice. Always consult with your doctor for underlying illness. Before beginning dietary investigation, consult a dietician with an interest in food intolerance. You can write for our list of supportive dietitians (confoodnet@ozemail.com.au)

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