

Survey Of Aspartame Studies: Correlation Of Outcome And Funding Sources

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ABSTRACT

Studies of aspartame in the peer reviewed medical literature were surveyed for funding source and study outcome. Of the 166 studies felt to have relevance for questions of human safety, 74 had Nutrasweet® industry related funding and 92 were independently funded. One hundred percent of the industry funded research attested to aspartame's safety, whereas 92% of the independently funded research identified a problem. A bibliography supplied by the Nutrasweet® Company included many studies of questionable validity and relevance, with multiple instances of the same study being cited up to 6 times. Questions are raised both about aspartame's safety and the broader issue of the appropriateness of industry sponsorship of medical research.

As the chart currently stands, it includes classic studies, case reports, literature reviews and letters to the editor. A meta-analysis, critically evaluating study protocols, pooling studies with data, evaluating case reports and letters separately, etc. is clearly needed. Even in its present form, however, the chart highlights findings which are noteworthy.

Of the industry-sponsored articles, 74/74 (100%) attested to aspartame's safety. Of the non-industry sponsored articles, 84/91 (92%) identified a problem. The seven non-industry studies attesting to aspartame's safety were six studies from the FDA and one literature review reflecting almost exclusively the industry sponsored research.

One could argue that the FDA studies should not be considered truly "independent". The role of the FDA in aspartame's approval has been quite controversial and is a matter of public record. In 1980, the FDA appointed a Board of Public Inquiry to address the question of aspartame's safety. The Board concluded that some of Searle's test results were "bizarre" and recommended additional long-term testing prior to approval. Commissioner Arthur Hull Hayes overruled the Board and granted approval for aspartame's use in dry foods in 1981 and in beverages in 1983. Within 3 months of the 1983 approval, Hayes resigned from the FDA and accepted a position as a paid consultant to Searle's public relations firm. If the FDA studies and the literature review

focusing only on the Nutrasweet® industry funded research are excluded, then 100% of the truly independently funded research demonstrated some type of adverse reaction to aspartame.

Whether 100% or 92%, the clear split in the literature, with outcome correlated so closely to funding source, is deeply troubling.

STUDY OUTCOME

DATE	<u>INDUSTRY SPONSORED RESEARCH</u>	FUNDING SOURCE	ADVERSE REACTION IDENTIFIED	SAFETY OF ASPARTAME SUPPORTED
1976	Koch R, Schaeffler G, Shaw NF. Results of Loading Doses of Aspartame by two Phenylketonuric (PKU) Children Compared with two Normal Children. J Toxicol Environ Health 1976;2(2):459-469.	Searle		X
1976	Stern SB, Bleicher SJ, Flores A, et al. Administration of Aspartame in Non-Insulin Dependent Diabetics, J Toxicol Environ Health 1976;2:429-439.	Searle		X
1976	Knopp RH, Brandt K, Arky RA. Effects of Aspartame in Young Persons During Weight Reduction. J Toxicol Environ Health 1976;2:417-428.	Searle		X
1976	Frey GH. Use of Aspartame By Apparently Healthy Children and Adolescents. J Toxicol Environ Health 1976;2:401-415.	Searle		X
1976	Koch R, Shaw KN, Williamson M, Haber M. Use of Aspartame in Phenylketonuric Heterozygous Adults. J Toxicol Environ Health 1976;2(2):453-7.	Searle		X
1977	Stegink LD, Filer LJ Jr, Baker GL. Effect of Aspartame and Aspartate Loading Upon Plasma and Erythrocyte Free Amino Acid Levels in Normal Adult Volunteers. J Nutr 1977;107:1837-1845.	Searle		X
1979	Stegink LD, Filer LJ Jr, Baker GL. Plasma, Erythrocyte and Human Milk Levels of Free Amino Acids in Lactating Women Administered Aspartame or Lactose. J Nutr 1979;109:2173-2181.	Searle		X
1980	Potts WJ, Bloss JL, Nutting EF. Biological Properties of Aspartame-Evaluation of Central Nervous System Effects. J Environ Pathol Toxicol 1980;3(5-6):341-353.	Searle		X
1980	Saunders FJ, Pautsch WF, Nutting EF. The	Searle		X

	Biological Properties of Aspartame. IV. Examination for Endocrine Like Activities. J Exper Pathol Toxicol 1980;3:363-373.			
1980	Lennon HD, Metcalf LE, Mares SE. The Biological Properties of Aspartame. IV. Effects on Reproduction and Lactation. J Environ Pathol Toxicol 1980;3:375-386.	Searle		X
1980	Bianchi RG, Muir ET, Cook DL, Nutting EF et al. The Biological Properties of Aspartame. III. Actions Involving the Gastrointestinal System, J. Environ Pathol Toxicol 1980;3:355-362.	Searle		X
1980	Aspinall RL, Saunders RN, Pautsch WF, Nutting SF. The Biological Properties of Aspartame: Effects on a Variety of Physiological Parameters Related to Inflammation and Metabolism. J Environ Pathol Toxicol 1980 Jun-Jul;3(5-6):387-95.	Searle		X
1981	Stegink LD, Brummel MC, McMartin K, et al. Blood Methanol Concentrations in Normal Adult Subjects Administered Abuse Doses of Aspartame. J Toxicol Environ Health 1981;7:281-290.	Searle		X
1981	Stegink LD, Filer LJ Jr, Baker GL. Plasma and Erythrocyte Concentrations of Free Amino Acids in Adult Humans Administered Abuse Doses of Aspartame. J Toxicol Environ Health 1981;7:291-305	Searle		X
1981	Stegink LD, Filer LJ Jr, Baker GL. Effect of Aspartame and Sucrose Loading in Glutamate-Susceptible Subjects. Am J Clin Nutr 1981;34(9):1899-1905.	Searle		X
1981	Ishii H. Incidence of Brain Tumors in Rats Fed Aspartame. Toxicology Letters 1981;7:433-437.	Ajinomoto & Searle		X
1981	Ishii H, Koshimizu T, Usami S, Fujimoto T. Toxicity of Aspartame and its Diketopiperazine for Wistar Rats by Dietary Administration for 104 weeks. Toxicology 1981;21:91-94.	Ajinomoto & Searle		X
1982	Stegink LD, Filer LJ Jr, Baker GL. Effect of Aspartame Plus Monosodium L-Glutamate Ingestion on Plasma and Erythrocyte Amino Acid Levels in Normal Adult Subjects Fed a High Protein Meal. Am J Clin Nutr 1982;36:1145-1152.	Searle		X

1983	Stegink LD, Filer LJ Jr, Baker GL. Plasma Amino Acid Concentrations in Normal Adults Fed Meals with Added Monosodium L-Glutamate and Aspartame. J Nutr 1983;113:1851-1860.	Searle		X
1983	Filer LJ Jr, Baker GL, Stegink LD. Effect of Aspartame Loading on Plasma and Erythrocyte Free Amino Acid Concentrations in One Year Old Infants. J Nutr 1983;113:1591-1599.	General Foods Corp.		X
1983	Stegink LD, Brummel MC, Filer LJ Jr, Baker GL. Blood Methanol Concentrations in One-Year Old Infants Administered Graded Doses of Aspartame. J Nutr 1983;113:1600-1606.	General Foods Corp.		X
1984	Roak-Foltz and Leveille. Projected Aspartame Intake: Daily Ingestion of Aspartic Acid, Phenylalanine, and Methanol. In: Stegink L, Filer L (eds). Aspartame: Physiology and Biochemistry, New York: Marcel Dekker Inc., 1984.	Searle		X
1985	Sturtevant F. Does Aspartame Cause Methanol Toxicity. In: Wurtman and Ritter-Walker (eds). Dietary Phenylalanine and Brain Function. Boston: Birkhauser, 1988, pp. 163-168.	Searle		X
1985	Nehrling JK, Kobe P, McLane MP, et al. Aspartame Use by Persons with Diabetes. Diabetes Care 1985;8:415-17.	Searle		X
1985	Gaull GE. Aspartame and Seizures. Lancet 1985;2(8469-70):1431	Nutra sweet		X
1986	Torii K, Mimura T, Takasaki Y, Ichimura M. Dietary Aspartame with Protein on Plasma and Brain Amino Acids, Brain Monoamines and Behavior in Rats. Physiol Behav 1986;36(4):765-72.	Ajinomoto		X
1986	Torii K, Mimura T, Takasaki Y, Ichimura M. Effect of Mealing on Plasma and Brain Amino Acid, and Brain Monoamine in Rats after Oral Aspartame. Physiol Behav 1986;36(4):759-64.	Ajinomoto		X
1986	Szucs EF, Barrett KE, Metcalfe DD. The Effect of Aspartame on Mast Cells and Basophils. Food Chem Toxic 1986;24(2):171-174	Intl. Life Sciences		X
1987	Schiffman SS, Buckley CE 3 rd Sampson	Nutra		X

	HA. Aspartame and Susceptibility to Headache. N Engl J Med 1987;317(19):1181-1185.	sweet		
1987	Ryan-Harshman M, Leiter LA, Anderson GH. Phenylalanine and Aspartame Fail to Alter Feeding Behavior, Mood and Arousal in Men. Physiology and Behavior 1987;39:247-253.	Intl. Life Sciences		X
1987	Stegink LD, Filer LJ Jr, Baker GL. Plasma Amino Acid Concentrations in Normal Adults Ingesting Aspartame and Monosodium L-Glutamate as Part of a Soup/Beverage Meal. Metabolism 1987;36(11):1073-1079.	Nutra sweet		X
1987	Cho ES, Coon JD, Stegink LD. Plasma and Urine Diketopiperazine Concentrations in Normal Adults Ingesting Large Quantities of Aspartame. Food Chem Toxicol 1987;25(7):499-504.	Searle		X
1988	Kanders BS, Lavin PT, Kowalchuck M, et al. An Evaluation of the Effect of Aspartame on Weight Loss. Appetite 1988;Volume II(Suppl 1):73-84.	Nutra sweet		X
1988	Shaywitz, et. al. Effects of Aspartame on Seizures in Children. In: Wurtman, Ritter-Walker (eds.) Dietary Phenylalanine and Brain Function. Boston:Birkhauser, 1988, pp. 163-168.	Nutra sweet		X
1988	Leiter, et. al., Effects of Phenylalanine and Aspartame on Mealtime Food Intake and Behavior in Adult Males. In: Wurtman, Ritter-Walker (eds.) Dietary Phenylalanine and Brain Function. Boston:Birkhauser, 1988, pp. 296-299.	Intl. Life Sciences		X
1988	Keybach and Allen, Resources for Inferential Estimates of Aspartame Intake in the United States. In: Wurtman, Ritter-Walker (eds.) Dietary Phenylalanine and Brain Function. Boston:Birkhauser, 1988, pp. 365-372.	Nutra sweet		X
1988	Jobe and Dailey. Role of Monoamines in Seizure Predisposition in the Genetically Epilepsy-Prone Rat. In: Wurtmann and Ritter-Walker (eds.). Dietary Phenylalanine and Brain Function. Boston:Birkhauser, 1988, pp. 127-130.	Nutra sweet		X

1988	Horwitz DL, McLane M, Cobe P. Response to Single Dose of Aspartame or Saccharin by NIDDM Patients. Diabetes Care 1988;2:230-34.	Nutra sweet		X
1989	McAnulty PA, Collier MJ, Enticott J, et al. Absence of Development Effects in CFI Mice Exposed to Aspartame in Utero. Fundam Appl Toxicol 1989 Aug;13(2):296-302.	Nutra sweet		X
1989	Reilly MA, Debler EA, Fleischer A. Lack of Effect of Chronic Aspartame Ingestion on Aminergic Receptors in Rat Brain. Biochem Pharmacol 1989;38(23):4339-4361.	Nutra sweet		X
1989	Stegink LD, Filer LJ Jr, Bell EF, Ziegler EE, Tephly TR. Effect of Repeated Ingestion of Aspartame-Sweetened Beverage on Plasma Amino Acid, Blood Methanol and Blood Formate Concentration in Normal Adults. Metabolism 1989;38(4):357-363.	Nutra sweet		X
1989	Stegink LD, Filer LJ Jr, Bell EF, et al. Repeated Ingestion of Aspartame-Sweetened Beverage: Effect on Plasma Amino Acid Concentrations in Individuals Heterozygous for Phenylketonuria. Metabolism 1989;38(1):78-84.	Searle		X
1989	Gupta V, Cochran C, Parker TF, et al. Effect of Aspartame on Plasma Amino Acid Profiles of Diabetic Patients with Chronic Renal Failure. Am J Clin Nutr 1989;49:1302-6.	Nutra sweet		X
1989	Leon AS, Hunninghake DB, Bell C, et al. Safety of Long-term Large Doses of Aspartame. Arch Intern Med 1989;149(10):2318-24.	Searle		X
1989	Dailey JW, Lasley SM, Mishra PK, et al. Aspartame Fails to Facilitate Pentylentetrazol-Induced Convulsions in CD-1 Mice. Toxicol Appl Pharmacol 1989;98:475-486.	Nutra sweet		X
1989	Anderson GH, Saravis S, Schacher R, Zlotin S, Leiter LA et al. Aspartame: Effect on Lunch Time Food Intake Appetite and Hedonic Response in Children. Appetite 1989;13:93-103.	Intl. Life Sciences		X

1989	Holder MD. Effects of Perinatal Exposure to Aspartame on Rat Pups. Neurotoxicology and Teratology 1989;11(1):1-6.	Nutra sweet		X
1989	Cain DP, Boon F, Bevan M. Failure of Aspartame to Affect Seizure Susceptibility in Kindled Rats. Neuropharmacology 1989;28(4):433-435.	Nutra sweet		X
1989	Carlson HE, Shaw JH. Aspartame and its Constituent Amino Acids: Effect on Prolactin, Cortisol, Growth Hormone, Insulin and Glucose in Normal Humans. Am J Clin Nutr 1989;49(3):427-432	Nutra sweet		X
1990	Saravis S, Schachar R, Zlotkin S, Leiter LA, Anderson GH. Aspartame: Effects on Learning Behavior and Mood. Pediatrics 1990;86(1):75-83.	Intl. Life Sciences		X
1990	Stegink LD, Filer LJ Jr, Bell EF, et al. Repeated Ingestion of Aspartame-Sweetened Beverages: Further Observations in Individuals Heterozygous for Phenylketonuria. Metabolism 1990;39(10):1076-1081.	Searle		X
1990	Lapierre KA, Greenblatt DJ, Goddard JE, Hartz JS, Shader RI. The Neuropsychiatric Effects of Aspartame in Normal Volunteers. J Clin Pharmacol 1990;30(5):454-460.	Nutra sweet		X
1990	Burns TS, Starget WW, Hurwitz A. Bioavailability of Phenylalanine and Aspartame from Aspartame (20 mg/kg) in Capsules and Solution. Metabolism 1990;39(11):1200-3	Nutra sweet		X
1991	Koeppe RA, Shulkion BL, Rosenspire KC. Effect of Aspartame-Derived Phenylalanine on Neutral Amino Acid Uptake in Human Brain: A Positron Emission Tomography Study. J Neurochem 1991;1526-1535.	Nutra sweet		X
1991	Garriga MM, Berkebile C, Metcalfe DD. A Combined Single - Blind, Double Blind, Placebo-Controlled Study to Determine the Reproducibility of Hypersensitivity Reactions to Aspartame. J Allergy Clin Immunol 1991 April;87(4):821-7.	Intl. Life Sciences		X
1991	Mullenix PJ, Tassinari MS, Schunior A,	Nutra		X

	Kernan WJ. No Change in Spontaneous Behavior of Rats After Oral Doses of Aspartame, Phenylalanine and Tyrosine. <i>Fundam Appl Toxicol</i> 1991; 16(3):495-505.	sweet		
1991	Moser RH. Aspartame. <i>South Med J</i> 1991;84(12):1509-10.	Nutra sweet		X
1991	Daily JW, Lasley SM, Burger RL, et al. Amino Acids, Monoamines and Audiogenic Seizures in Genetically Epilepsy-Prone Rats: Effects of Aspartame. <i>Epilepsy Res</i> 1991;8:122-133.	Nutra sweet		X
1991	Fernstrom JD, Fernstrom MH, Massoudi MS. In Vivo Tyrosine Hydroxylation in Rat Retina: Effect of Aspartame Ingestion in Rats Pretreated with P-Chlorophenylalanine. <i>Am J Clin Nutr</i> 1991;53(4):923-9.	Nutra sweet		X
1991	Burns TS, Stargel WW, Tschanz C, Kotsonis PN, Hurwitz A, et al. Aspartame and Sucrose Produce a Similar Increase in the Plasma Phenylalanine to Large Neutral Amino Acid Ratio in Healthy Subjects. <i>Pharmacology</i> 1991;43:210-219.	Nutra sweet		X
1991	Butchko HH, Kotsonis FN. Acceptable Daily Intake vs. Actual Intake: The Aspartame Example. <i>J Am Coll Nutr</i> 1991;10(3):258-266.	Nutra sweet		X
1992	Hjelle JJ, Dudley RE, Marietta MP, et al. Plasma Concentrations and Pharmacokinetics of Phenylalanine in Rats and Mice Administered Aspartame. <i>Pharmacology</i> 1992;44(1):48-60.	Nutra sweet		X
1993	Karstaedt PJ, Pincus JH. Aspartame Use in Parkinson's Disease. <i>Neurology</i> 1993;43(3 pt 1):611-613.	Intl. Life Sciences		X
1993	Geha R, Buckley CE, Greenberger P, et al. Aspartame is no More Likely than Placebo to Cause Urticaria/Angioedema: Results of a Multicenter, Randomized, Double-Blind, Placebo-Controlled, Crossover Study. <i>J Allergy Clin Immunol</i> 1993;92:513-20.	Nutra sweet		X
1993	Hertelendy ZI, Mendenhall CL, Rouster SD, Marshall L, Weesner R. Biochemical and Clinical Effects of Aspartame in Patients with Chronic, Stable Alcoholic	Nutra sweet		X

	and Liver Disease. Am J Gastroenterol 1993;88(5):737-743.			
1994	Trefz F, deSonneville L, Matthis P, et al. Neuropsychological and Biochemical Investigations in Heterozygotes for Phenylketonuria During Ingestion of High Dose Aspartame. Human Genetics 1994;93:369-374.	Nutra sweet		X
1994	Shaywitz BA., Anderson GM, Novotny EJ, et al. Aspartame has no Effect on Seizures or Epileptiform Discharges in Epileptic Children. Ann Neurol 1994;35:98-103.	Nutra sweet		X
1994	Shaywitz BA, Sullivan CM, Anderson GM, et al. Aspartame, Behavior, and Cognitive Function in Children With Attention Deficit Disorder. Pediatrics 1994;93:70-75.	Nutra sweet		X
1994	Wolraich MI, Lindgren SD, Stumbo PJ, et al. Effects of Diets High in Sucrose or Aspartame on the Behavior and Cognitive Performance of Children. N Engl J Med 1994;330(5):301-307.	Intl. Life Sciences		X
1994	Drewnowski A, Massein C, Louis-Sylvestre J, et al. Comparing the Effects of Aspartame and Sucrose on Motivational Ratings, Taste Preferences, and Energy Intakes in Humans. Am J Clin Nutr 1994;59:338-65.	Nutra sweet		X
1994	Moser RH. Aspartame and Memory Loss. JAMA 1994;272(19):1543.	Nutra sweet		X
1994	Butchko HH, et al. Postmarketing Surveillance of Food Additives. In: Nutritional Toxicology. Kotsonig, Machky and Jhelle, (eds.) New York: Raven Press Ltd. 1994.	Nutra sweet		X
1994	Drewnowski A, Massier C, Louis-Sylvestre J, et al. The Effects of Aspartame Versus Sucrose on Motivational Ratings, Taste Preferences, and Energy Intakes in Obese and Lean Women. International Journal of Obesity 1994;18:570-578.	Nutra sweet		X
1995	Rowan AJ, Shaywitz BA, Tuchman L, et al. Aspartame and Seizure Susceptibility: Results of a Clinical Study in Reportedly Sensitive Individuals. Epilepsia 1995;36(3):270-5.	Nutra sweet		X

STUDY OUTCOME

DATE	<u>NON-INDUSTRY SPONSORED RESEARCH</u>	FUNDING SOURCE	ADVERSE REACTION IDENTIFIED	SAFETY OF ASPARTAME SUPPORTED
1970	Olney, Brain Damage in Infant Mice Following Oral Intake of Glutamate, Aspartate or Cysteine. Nature 1970;227:609-610.	Washington University	X	
1975	Olney JW, Aspartame as a Sweetener. NEJM 1975;292(23):1244-1245.	Washington University	X	
1977	Mishiro Y and Keneko H, Effect of a Dipeptide, Aspartame, on Lactic Acid Production in Human Whole Saliva. J Dent Res 1977;56(11):1427.	Nippon Dental University, Tokyo	X	
1979	Brunner RL, Vorhees CV, Kinney L, Butcher RE, et al., Aspartame: Assessment of Developmental Psychotoxicity of a New Artificial Sweetener. Neurobehavioral Toxicology 1979;1:79-86.	USFDA	X	
1980	Olney, Brain Damage in Mice from Voluntary Ingestion of Glutamate and Aspartate. Neurobehavioral Toxicology and Teratology 1980;2:125-129.	Washington University	X	
1982	Uribe, Potential Toxicity of a New Sugar Substitute in Patients with Liver Disease. N Engl J Med 1982;173-174.	Institute National De La Nutrition Mexico	X	
1983	Wurtman, Effects of Aspartame and Glucose on Rat Brain Amino Acids and Serotin. New England Journal of Medicine 1983;309(7):429-430.	M.I.T.	X	
1983	Wurtman RJ, Neurological Changes Following High Dose Aspartame with Dietary Carbohydrates. N Engl J Med 1983;309(7):429-430.	M.I.T.	X	
1984	Olney, Excitotoxic Food Additives Relevance of Animal Studies to Human Safety. Neurobehavioral Toxicology and Teratology 1984;6:455-562.	Research Scientist Award MH-38894	X	
1984	Monte, Aspartame: Methanol and the Public Health. J Appl Nutr 36(1):42-54.	Arizona State University	X	
1984	Yokogoshi H,k Roberts CH, Canballero B, Wuetman RJ, Effects of Aspartame and	M.I.T.	X	

	Glucose Administration on Brain and Plasma Levels of Large Neutral Amino Acids and Brain 5-Hydroxyindoles. Amer J Clin Nutr 1984;40:1-7.			
1984	Mahalik MP and Gautieri RF, Reflex Responsiveness of CF-1 Mouse Neonates Following Maternal Aspartame Exposure. Research Communications in Psychology, Psychiatry & Behavior 1984;9(4):385-403.	None Specified	X	
1985	Novick, Aspartame Induced Granulomatous Panniculitis. Ann Int Med 102(2):206-207.	Mt. Sinai Medical Center	X	
1985	Grobelny D and Galardy RE, A Metabolite of Aspartame Inhibits Angiotensin Converting Enzyme. Biochemical and Biophysical Research Communications, 1985; 128(2):960-964.	University of Kentucky	X	
1985	Wurtman, RJ, Aspartame: Possible Effects on Seizure Susceptibility. Lancet 1985;2(8463):1060.	M.I.T.	X	
1985	Ferguson JM, Interaction of Aspartame and Carbohydrates in an Eating Disordered Patient. Am J Psych 1985 Feb;142(2):271.	None	X	
1986	Kulczycki A Jr., Aspartame Induced Urticaria. Ann Intern Med 1986;104(2):207-208.	N.I.H.	X	
1986	Pardridge WM, The Safety of Aspartame [Letter]. JAMA 1986;256(19):2678.	UCLA School of Medicine	X	
1986	Koehler SM, A New Dietary Caution for Migraine Sufferers. Dir in Appl Nut 1986;1:1-7.	Center for Brain Sciences and Metabolism U of FL.	X	
1986	Kiritsky PJ and Maher TJ, Acute Effects of Aspartame on Systolic Blood Pressure in Spontaneously Hypertensive Rats. J Neural Transmission 1986;66(2):121-128.	National Institute of Neurological, Communicative Diseases and Stroke	X	
1986	Yokogoshi H and Wurtman RJ, Acute Effects of Oral or Parenteral Aspartame on Catecholamine Metabolism in Various Regions of Rat Brain. J Nutr 1986;116:356-364.	M.I.T.	X	
1986	Walton, Seizure and Mania After High Intake of Aspartame. Psychosomatics 27:218-220.	Chautauqua County Dept of Mental Health	X	

1986	Drake ME, Panic Attacks and Excessive Aspartame Ingestion [Letter]. Lancet 1986;2(8507):631.	None	X	
1986	Johns DR, Migrane Provoked by Aspartame. New Eng J Medicine 1986;315(7):456.	None	X	
1986	Blundell JE, Hill AJ, Paradoxical Effects of an Intense Sweetener Aspartame on Appetite. Lancet 1986;1(8489):1092-3.	None	X	
1986	Caballero B, Mahon BE, Rohr FJ, Levy HL, Wurtman RJ, et. al., Plasma Amino Acid Levels after Single Dose Aspartame Consumption in Phenylketonuria Mild Hyperphenylalaninemia and Heterozygous State for Phenylketonuria. Journal of Pediatrics 1986;109(4):668-671.	National Institute of Neurological, Communicate Diseases and Stroke	X	
1986	Bradstock MK, Serdula MK, Marks IS, et al., Evaluation of Reactions to Food Additives: The Aspartame Experience. AM J Clin Nutr 1986 Mar;43(3):464-9.	Federal Government	X	
1986	Coulombe RA Jr., Sharma RP, Neurobiochemical Alterations Induced by the Artificial Sweetener Aspartame. Toxicol Appl Pharmacol 1986;83(1):79-85.	Utah State University	X	
1987	Wurtman RJ, Aspartame Effects on Brain Serotonin. Am J Clin Nutr 1987 Apr;45(4):799-803.	M.I.T.	X	
1987	Maher TJ and Wurtman RJ, Possible Neurologic Effects of Aspartame, a Widely Used Food Additive. Environmental Health Perspectives 1987;75:53-57.	M.I.T. & Federal Government	X	
1987	Drogari E, Smith I, Beasley M, Lloyd JK, Timing of Strict Diet in Relation to Fetal Damage in Maternal Phenylketonuria: An International Collaborative Study by the MRC/DHSS Phenylketonuria Register. Lancet 1987;2(8565):927-30.	Institute of Child Health	X	
1987	Elsas, et al., Changes in Physiological Concentrations of Blood Phenylalanine Produce Changes in Human Brain Function. Dietary Phenylalanine and Brain Function Birkhauser Boston 1988;187-195.	Emory University	X	
1988	Roberts: Neurological, Psychiatric and Behavioral Reactions to Aspartame in 505 Aspartame Reactors. In: Wurtman and Ritter-Walker (eds.). Dietary Phenylalanine and Brain Function. Boston: Birkhauser, 1988, pp.	Palm Beach Institute for Medical Research	X	

	373-376.			
1988	Pinto and Maher, Aspartame, Phenylalanine and Seizures in Experimental Animals. In: Wurtman and Ritter-Walker (eds.). Dietary Phenylalanine and Brain Function. Boston: Birkhauser, 1988, pp. 95-103.	National Institute of Neurological and Communicative Diseases and Stroke	X	
1988	Roberts, Reactions Attributed to Aspartame Containing Products: 551 Cases. Journal of Applied Nutrition 1988;40:85-94.	Palm Beach Institute for Medical Research	X	
1988	Roberts, Neurological Psychiatric and Behavioral Reactions to Aspartame in 505 Aspartame Reactors. In: Wurtman and Ritter-Walker (eds.). Dietary Phenylalanine and Brain Function. Boston: Birkhauser, 1988, pp. 373-376.	None	X	
1988	Wurtman and Maher, Calculation of the Aspartame Dose for Rodents that Produces Neurochemical Effects Comparable to Those Occurring in People. In: Wurtman and Ritter-Walker (eds.). Dietary Phenylalanine and Brain Function. Boston: Birkhauser, 1988, pp. 144-148.	M.I.T.	X	
1988	Pinto JM, Mahea TJ, Administration of Aspartame Potentiates Pentylentetrazole and Fluorothyl-Induced Seizures in Mice. Neuropharmacology 1988;27(1):51-55.	Massachusetts College of Pharmacy	X	
1988	Walton, The Possible Role of Aspartame in Seizure Induction. Proceedings of the first International Conference on Phenylalanine and the Brain. Wurtman RJ, Walker E (eds.), Center for Brain Sciences and Metabolism Charitable Trust, Cambridge, 1987.	Chautauqua County Dept of Mental Health	X	
1988	Tollefson L, Monitoring Adverse Reactions to Food Additives in the US Food and Drug Administration. Regulatory Toxicology and Pharmacology 1988;8(4):438-446.	FDA		X
1988	Olney, Excitotoxic Food Additives Functional Teratological Aspects. In Progress in Brain Research, Vol 73 Biochemical Basis of Functional Neuroteratology: Permanent Effects of Chemical on the Developing Brain, edited by Boer, GJ, et al., Elsevier, New York 1988.	Washington University	X	

1988	Tollefson L, Monitoring of Adverse Reactions to Aspartame Reported to the U.S. Food and Drug Administration. In: Wurtman and Ritter-Walker (eds.). Dietary Phenylalanine and Brain Function. Boston: Birkhauser, 1988, pp. 317-326.	FDA		X
1988	Steinmetzer and Kunkel, Aspartame and Headache [letter]. N Engl J Med 1988;318(18):1201.	Cleveland Clinic	X	
1988	Spiers, et al., Aspartame and Human Behavior: Cognitive and Behavioral Observations. In: Wurtman and Ritter-Walker (eds.). Dietary Phenylalanine and Brain Function. Boston: Birkhauser, 1988, pp. 169-178.	Center for Brain Sciences and Metabolism Charitable Trust	X	
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