

Searching for the truth about monosodium glutamate

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What I know now

Monosodium glutamate (MSG) is a manufactured product composed of L-glutamic acid (L-glutamate), sodium, moisture, D-glutamic acid (D-glutamate), pyroglutamic acid, and other impurities (unwanted and unavoidable by-products of the manufacture of L-glutamate). MSG is manufactured in plants throughout the world. In the United States, MSG is produced in Ajinomoto's factory in Eddyville, Iowa.

MSG is toxic. Its toxic ingredient is its manufactured free L-glutamate (MfG) which causes brain damage, obesity, infertility, behavior disorders, and a host of adverse reactions such as atrial fibrillation and asthma (https://www.truthinlabeling.org/recognizingadverse.html#list_adverse). When present in protein or released from protein in a regulated fashion (through routine digestion) L-glutamate is vital for normal body function. It is the principal neurotransmitter in humans, carrying nerve impulses from glutamate stimuli to glutamate receptors throughout the body. Yet, when present outside of protein in amounts that exceed what the healthy human body was designed to accommodate, L-glutamate becomes an excitotoxic neurotransmitter, firing repeatedly, damaging targeted glutamate-receptors and/or causing neuronal and non-neuronal death by over exciting those glutamate receptors until their host cells die (1,2).

My journey to knowledge

In 1971, Jack, my husband of three years, left hospital administration to become an investment banker, traveling the country, making presentations. And two abnormal things happened. First when landing at his destination, Jack appeared to be drunk: unsteady on his feet and unable to respond to questions. But he recovered by immediately going to a motel and sleeping for three hours before going to his meeting. In addition, Jack would lose consciousness in some, but not all restaurants.

I knew nothing about this. But after we flew to New Mexico on vacation and I watched Jack collapse while eating dinner, I pulled the story out of him. And the morning after returning to Chicago, Jack, at my insistence, was in his physician's office.

Monte Levinson, M.D., subjected Jack to virtually every diagnostic procedure available. "Jack, we've done all these tests and you're in perfect health. There is absolutely nothing wrong with you. However, there is one test that isn't back yet. Call me tomorrow morning and I'll give you that result. In the meantime I think you and Adrienne should

just relax. There's an absolutely incredible new restaurant you'll enjoy. Promise that you'll take your wife there for dinner tonight."

The next morning Jack called Dr. Levinson. "Was that a great place?" was the first thing Levinson said.

"Well the food was wonderful," Jack responded, "but as a matter of fact I got so very sick that Adrienne had to drive home."

"I thought so. That was the last test. You're MSG sensitive."

Between 1971 and 1988 nothing much MSG related happened. I read food labels, and Jack asked for MSG-free food in restaurants. And except for a slip up or two on Jack's part, all went well.

But as 1989 began, there came days of fatigue beyond imagination. Sometimes Jack couldn't put a sentence together; other times he just lost a critical word or two. Worst of all were the afternoons when Jack couldn't remember what he'd done in the morning.

Dr. Levinson said it wasn't Alzheimer's, but how did he know? He didn't have a picture of Jack's brain.

The symptoms would come and go, but rarely go. Jack had eliminated monosodium glutamate from his diet. He was very careful. I watched his every move, and I'll tell you he was very careful. So it wasn't monosodium glutamate, and it wasn't Alzheimer's, because Dr. Levinson said so. But if it wasn't Alzheimer's, then what was it?

The answer came in a book our oldest son insisted his father read.

"In Bad Taste: The MSG Syndrome," was written in 1988 by George Schwartz, M.D., a physician who had found that reactions that came after eating food laced with monosodium glutamate would also occur after eating food that contained hydrolyzed vegetable protein; natural flavoring; flavorings; vegetable protein; and/or vegetable, chicken, or beef broth as ingredients.

In early 1989, Jack had put himself on a diet. Not one of those pound-a-week diets that some people do, but an eat-less-lose-faster-than-you-should diet to meet the needs of someone who found the idea of dieting distasteful and simply wanted to get the job done.

And right on the cover of Dr. Schwartz's book was a picture of the canned tuna fish that Jack had been eating.

Jack had eliminated monosodium glutamate from his diet long ago. Now he eliminated hydrolyzed vegetable protein, natural flavoring, flavorings, vegetable protein, vegetable broth, chicken broth and beef broth — and the "Alzheimer's" disappeared.

The Alzheimer's was gone. In its place, Jack's reactions to monosodium glutamate were as before: monosodium glutamate alone caused mood swings and fatigue, while monosodium glutamate in combination with alcohol brought on anaphylactic shock. The greatest difference lay in the fact that Jack now realized that his reactions were precipitated by all kinds of ingredients that contained processed (manufactured) free glutamic acid—not just the one ingredient called monosodium glutamate. Confusing as it was at the time, and as it continues to be, those who are sensitive to the processed (manufactured) free glutamic acid found in monosodium glutamate, and all of the other ingredients that contain it, began to refer to all ingredients that contain processed (manufactured) free glutamic acid as MSG.

By the end of 1989 we knew that Jack's reactions to food were brought on by ingestion of monosodium glutamate and other food additives that contained its toxic component, MfG. But we knew nothing more, and I began to ask questions. What, exactly, caused his reactions? Why did some people react, while others did not? But I found it extraordinarily difficult to look for answers when I didn't know what the questions should be. I started with the phone book and the phone and looked up "dietician," and "nutrition," and "FDA" (Food and Drug Administration). I called colleges and universities, and when those to whom I spoke couldn't answer my questions, I asked them to tell me who could. The first call that paid off was to the University of Illinois, where I was referred to Dr. Steve Taylor at the University of Nebraska — "the authority on MSG." The Institute of Food Technologists, which is an association of food technologists (people concerned with design and implementation of chemicals to be used in processed foods), also referred me to Dr. Steve Taylor. Meanwhile, the American Dietetic Association, the American Medical Association, and the FDA referred me to The Glutamate Association.

I spoke to Richard Cristol at The Glutamate Association. He assured me that Jack could not possibly be sensitive to MSG, and he sent me a book that, he said, would prove that Jack was not sensitive to MSG. Richard Cristol also suggested that I speak to Steve Taylor, who assured me that Jack could not be sensitive to MSG, and suggested that I speak to Richard Cristol at The Glutamate Association. I had come full circle.

Only later did I come to understand that The Glutamate Association (Richard Cristol, chairman) had been set up by Ajinomoto, producer of MSG, to promote sales of MSG, and that Steve Taylor, as professor at the University of Nebraska, wrote and spoke out on the safety of MSG without acknowledging that he was a paid agent of Ajinomoto.

The book sent by Richard Cristol, *Glutamic Acid: Advances in Biochemistry and Physiology*(3), contained the proceedings of a symposium held in May, 1978 in Milan, Italy, for the thinly veiled purpose of appearing to prove that MSG was safe. As an educational psychologist trained in experimental psychology it took only some carefully focused attention and a bent toward the truth to realize that the research reported was, for the most part, built on inappropriate methodology and/or drew conclusions that did not follow from the results of the studies. There were, however, a limited number of

papers that appeared to contain more than propaganda. One by John Olney was particularly interesting, and I set out to read more.

I read everything I could find on the subject. When I couldn't understand what an author was saying, I went to the children's section of the library and took out elementary science books. I read dictionaries, encyclopedias, books, and journals. Being schooled in experimental psychology with a doctorate from the University of Wisconsin, I had no difficulty reading scientific articles, and quickly discovered that there were two distinct sorts of studies: those that set out to uncover the truth, whatever that might be; and those that set out to lend credibility to the notion that monosodium glutamate was safe.

Some studies seemed to conclude that monosodium glutamate was a harmless substance, while other studies concluded that monosodium glutamate was toxic. That was very interesting to me as a researcher, but told me nothing about the nature of the ingredients that caused Jack's debilitating reactions, and why some people, but not all, suffered similar reactions. And that, after all, was what I was desperate to know.

The answers did come eventually, not from studies of the safety/toxicity of monosodium glutamate, but from individual consumers, manufacturers, food chemists, food technologists, food encyclopedias, trade magazines, people Jack met on airplanes, and intuition. First Jack and I came to understand that all of the adverse reaction triggers named by Dr. Schwartz contained free glutamic acid, i.e., glutamic acid that existed separate and distinct from protein. It was only as consumers began reporting that they reacted to products in addition to those with ingredients named by Dr. Schwartz, that we began to realize that MSG-reactions were always associated with ingredients that contained manufactured free glutamic acid, whether freed from protein through some manufacturing process or through fermentation, or produced by genetically modified bacteria that were grown to excrete monosodium glutamate through their cell walls.

From trade journal articles and advertisements I learned that ingredients that contained processed free glutamic acid could be substituted for monosodium glutamate without sacrificing the perception of desirable taste. In addition, I learned that people in the flavoring industry understood that there was profit to be made from monosodium glutamate substitutes that had "clean labels," i.e., labels that gave no indication that was MSG in the product.

From a study done by Rundlett and Armstrong(4), I learned that processed food that contained free L-glutamic acid invariably contained free D-glutamic acid — a concept that had never occurred to me. And with that knowledge, I was able to search out information about the various impurities found in monosodium glutamate and the other ingredients that contained MSG. I even found an explanation of impurities present in monosodium glutamate tucked away in the files of the FDA's Dockets Management office.

On the Internet, I found copies of patents associated with the production of monosodium glutamate. It was from patents that we learned that in 1990 Ajinomoto's monosodium

glutamate was made by a process of bacterial fermentation wherein carefully selected genetically modified bacteria that were fed on various carbohydrate media secreted glutamic acid through their cell walls. It appears that the “monosodium glutamate” made by extraction without the aid of genetically modified bacteria prior to 1957, and much of the “monosodium glutamate” for sale in the United States after 1957, were not one and the same.

Before I was finished, I realized that any glutamic acid that was ingested as a single amino acid (with or without other single amino acids) would cause what we called MSG reactions in people who exceeded their tolerances for the substance. I also came to understand that the MfG can be intentionally produced/manufactured in food or chemical plants by acid hydrolysis, autolysis, enzymolysis, or bacterial fermentation; and MfG will be produced, possibly unintentionally, when a protein source is left to ferment. I found that MfG can be produced through a complex cooking process wherein a product referred to as a “reaction flavor” is produced from a combination of specific amino acids, reducing sugars, animal or vegetable fats or oils, and optional ingredients including hydrolyzed vegetable protein. And last but not least, I found that acid hydrolyzed proteins contain carcinogenic mono and dichloropropanols(5,6), and reactions flavors contain carcinogenic heterocyclic amines(7,8).

As pieces of the puzzle came together, I began to give serious consideration to the discrepancies in the published literature: the so-called scientific studies. I knew that MSG caused adverse reactions. How could it be, then, that industry was able to produce studies from which it could conclude that MSG was safe?

The key to understanding how data could be so manipulated — to come up with the convenient conclusion that monosodium glutamate was a harmless flavor enhancer — still eluded me. Through careful re-reading of each industry-sponsored study, I became aware that none met the assumptions of the statistical tests used and cited, and on that basis alone the conclusions drawn from each and every study were invalid. But there had to be something more.

And there was something more. In the double-blind studies, where subjects ingested monosodium glutamate on one occasion and a placebo on another, researchers reported that there were as many responses to placebos as there were to monosodium glutamate test material. And that, I knew, could not be true. Unless, of course, those placebos were not truly inert, as placebos are supposed to be. *But that was unthinkable. It was unthinkable that anyone — anyone — would lace placebos with material that might cause adverse reactions.*

By the beginning of 1991, however, I was thinking the unthinkable, and was sharing my concerns with Jack. Thus on February 4, 1991, at the Federation of American Societies for Experimental Biology (FASEB) hearing on the Safety of Amino Acids Used in Dietary Supplements, Jack, who had signed up to testify, questioned the propriety of placebo material being used by the International Glutamate Technical Committee (IGTC) in their double-blind studies of the safety of monosodium glutamate. We only found out much

later that in a March 22, 1991 letter written in response to a question raised by Sue Anne Anderson, R.D., Ph.D., Senior Staff Scientist with the Life Sciences Research Office at FASEB, IGTC chairman Ebert acknowledged that since 1978 all of the placebos in double blind IGTC-sponsored studies had been laced with aspartame — an ingredient that contains aspartic acid, an ingredient that causes brain lesions, endocrine disorders, migraine headache, depression and all the other reactions that can be caused by the free glutamic acid found in monosodium glutamate, hydrolyzed protein products, autolyzed yeast, etc.

I had started my quest with two questions, the first being, “What is the nature of the products that cause Jack’s reactions?” But before we found the answer to that first question, we had raised two others. First, given the fact that monosodium glutamate and the other ingredients that contain MfG have toxic potential, and there are no studies from which it could be legitimately concluded that monosodium glutamate is “safe,” why does the FDA allow the intentional addition of MSG and MfG to processed food? And second, why isn’t the US population aware of the toxic potential of MSG and MfG?

In 1994, Jack and I incorporated the Truth in Labeling Campaign (TLC) with its primary focus being on exposing the truth, the whole truth, and nothing but the truth about MSG. We were contemplating petitioning the FDA to label all sources of toxic glutamate, not just MSG, and the NoMSG group to which we belonged did not want to participate.

We started by filing a Citizen Petition asking for identification of all manufactured free glutamate through food labeling. That was followed by a lawsuit which was dismissed after Federal Magistrate judge Thomas Mummert III allowed the FDA to refuse our requests for appropriate discovery.

That in turn was followed by our review of the FDA/glutamate industry collusion that we found to be endemic at the FDA (<https://www.truthinlabeling.org/fda.html>). The FDA has a very fine system in place. They quote the lies of others, so they’re not themselves lying. And instead of lying, they simply don’t tell the truth.

I maintain and regularly update the webpage of the Truth in Labeling Campaign and respond to questions from MSG-sensitive people who reach out to us.

In January of this year (2021) I filed a Citizen Petition with the FDA requesting that the FDA strip excitotoxic MSG and MfG of their GRAS (generally recognized as safe) status. On March 1, I filed a second Citizen Petition requesting that the names of ingredients that contain excitotoxic MfG be added to the FDA’s list of chemical hazards used in food. MSG has been on that list for years.

When TLC was incorporated, Jack was still deluding himself with the hope that given a face-saving “out,” the FDA would admit to the toxicity of MSG and label MSG-containing ingredients appropriately. However, repeated visits to legislators in Washington, a law suit brought against the FDA over labeling, the FDA’s rejection of the “independent” study on the safety of MSG done for the FDA by FASEB, the EPA’s refusal to evaluate

the toxic effects of MSG used in products they regulate, and California's acquiescence to the forces of the glutamate industry, finally convinced us that no amount of truth would be sufficient to counter the glutamate industry's control of the US government and our health care community. The power of industry and the greed of people in all walks of life and with all degrees of power who are fed by industry have made it virtually impossible for the consumer to know the truth, the whole truth, and nothing but the truth about MSG. But I'll not stop trying.

Sources of information

In general, I found all sources of information to be reliable except those owned by, or beholden to, the glutamate industry. Oftentimes MSG-is-safe ads appearing in media outlets are presented as news, and the unsophisticated reader would have no way of knowing that. The journals in which agents of the glutamate industry publish often have "memberships" or take ads from the glutamate industry, and the peers who review their peer-reviewed studies are colleagues of the authors. Similarly, the FDA parrots the words of the glutamate industry proclaiming that MSG is harmless. Their cooperation is so blatant, that the FDA has not even criticized the glutamate industry's double-blind studies of the safety of MSG for using excitotoxic amino acids (known to cause reactions identical to those caused by MSG) in placebos.

References

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3. Glutamic acid: advance in biochemistry and physiology. Filer LJ Jr., Garattini S, Kare MR, Reynolds WA, Wurtman RJ (Eds), New York: Raven, 1979.
4. Rundlett KL, Armstrong DW. Evaluation of free D-glutamate in processed foods. *Chirality*. 1994;6:277-282.
5. Pommer K. New Proteolytic enzymes for the production of savory ingredients. *Cereal Foods World*. 1995;40(10):745-748.
6. *Food Chemical News*, Dec 2, 1996. pp24-25.
7. Lin LJ. *Regulatory status of maillard reactions flavors*, Washington DC: Division of Food and Color Additives, Center for Food Safety and Applied Nutrition, Food and Drug Administration. Paper presented at a meeting of the American Chemical Society, August 24, 1992.
8. *Food Chemical News*, May 31, 1993. p16.

For more information

If you have questions about carcinogenic propanols in hydrolyzed protein products, please refer to the National Toxicology Program (NTP) of the National Institute of Environmental Health Sciences (NIEHS) at the National Institutes of Health (NIH) [Review of Toxicological Literature](#), and the Codex Alimentarius Commission [Position Paper on Chloropropanols](#).