MONOSODIUM GLUTAMATE (MSG)

Adrienne Samuels, Ph.D., September, 1995

The Basics

MSG sensitivity is a sensitivity to free glutamic acid that occurs in food as a consequence of manufacture. All protein contains glutamic acid bound in it, but only when glutamic acid has been freed from protein prior to ingestion do people express MSG-sensitivity reactions. Some unadulterated protein may also have minute amounts of free glutamic acid associated with it, but MSG-sensitive people report no adverse reactions following ingestion of unadulterated protein. Any free glutamic acid freed from protein by a manufacturing process before it is eaten can cause the MSG reaction. The source of the hydrolyzed protein (soy, corn, wheat, etc..) appears to be irrelevant.

MSG is manufactured through a process of protein hydrolysis. When a product is 99% pure MSG, the product is called "monosodium glutamate" by the FDA and must be labeled as such. However, when a hydrolyzed protein contains less than 99% MSG, the FDA does not require that the MSG be identified. "Autolyzed yeast," "hydrolyzed soy protein," and "sodium caseinate," are examples of names given to hydrolyzed proteins on food labels.

Under FDA regulation, hydrolyzed protein products may be used as ingredients in other products without mention of the original hydrolyzed protein product. For example, "hydrolyzed soy protein," when used in "flavoring(s)," "natural flavoring(s)," "natural flavor(s)," and products called broth, bouillon, or natural chicken flavoring, etc., does not have to be mentioned on product labels when the food processor claims that the hydrolyzed protein is being used for purposes other than flavoring. "Hidden Sources of MSG" lists some of the ingredients presently used to hide MSG.

Use of MSG in food is growing. MSG is found in most soups, salad dressings, and processed meats; in some crackers, bread, canned tuna fish, most frozen entrees, ice cream, and frozen yogurt. It is often used in "low fat" foods to make up for the flavor lost when fat is reduced or eliminated.

In 1969, Schaumburg et al. determined that approximately 30% of our population suffered adverse reactions when fed MSG in an ordinary diet.1 Reif-Lehrer2 and Kenney and Tidball3 confirmed his findings. Those studies were challenged by Kerr et al. in a 1979 glutamate industry sponsored study.4 Kerr et al. found that 43 percent of respondents reported one or more unpleasant symptoms associated with eating, but concluded that only 1.8% of the population might be sensitive to MSG. To accomplish this, Kerr et al. decreed that the only true symptoms of MSG-sensitivity, (that he called "Chinese restaurant syndrome"), were "burning, tightness, and numbness," experienced simultaneously, that commenced between 10 minutes and 2 hours after the start of a meal, and lasted 4 hours or less. Kerr et al. had to ignore all other reported symptoms in order to come up with this 1.8% figure.
Given the increase in use of MSG since 1979, we would presently expect more than 30% of the population to suffer adverse reactions to MSG in an ordinary diet.

Pinpointing MSG as a Reaction Trigger

MSG-sensitive people report reactions ranging from simple skin rash to severe depression and life-threatening physical conditions. Two or more reactions occurring together, or one following another, are not uncommon. The amount of MSG ingested may also play a role in the specific nature of a reaction. The most commonly reported reaction is migraine headache.5

Diagnosis of MSG sensitivity is extremely difficult.

- None of the symptoms of MSG-toxicity are caused exclusively by MSG. Most, if not all, could be caused by various physical conditions as well as by other food additives.

- Some people eat MSG and react immediately. Some react as late as 48 hours (or even 72 hours) after ingesting MSG. Of help in diagnosis is the fact that each person typically reacts within one predictable time frame after ingesting MSG.

- Reactions are dose related. Some people can not tolerate even the smallest amount of MSG without having a reaction. Others tolerate single small amounts, but react to MSG when they ingest a gram or more in any one meal. Others can ingest five grams or more without evidencing a reaction.

- The adverse effects of MSG ingestion may be cumulative. People have reported eating small amounts of MSG once a week without experiencing reactions, while having reactions when those same products were consumed two or three days in a row.

- MSG is very often hidden in food. Hiding MSG makes recognition of MSG so complex and confusing that people who are sensitive to MSG have a great deal of difficulty realizing it. If a person had a reaction after eating something known to contain MSG, he might suspect that MSG was the culprit. But if that person had the same reaction after eating something that contained MSG but did not disclose the fact on a label, he would very likely question his original suspicion. Until all sources of MSG are easily identifiable, evaluation of possible MSG reactions will be difficult.

Difficulty in diagnosing MSG-sensitivity is compounded by the industry practice of illegally advertising "No MSG" or "No MSG Added" on product labels when the products do contain MSG.

- Diagnostic tools available to the physician are limited to challenge. In a physician's office, an appropriate dose (or doses) would have to be selected, and provision would have to be made for both restricting the patient's contact with other potential reaction triggers and observing reactions delayed by
as much as 72 hours.

As an alternative, physician and patient working together may be able to identify, or rule out, MSG as a reaction trigger through analysis of a patient food diary.

About the People who Sell the Product

There is considerable evidence to suggest that consumption of MSG places humans at risk, and that the greatest risk is faced by children.6

On the other hand, studies designed, implemented, and/or supported by the glutamate industry are generally questionable. All of the data presented by The Glutamate Association, the International Glutamate Technical Committee, and their sponsors, as "proving" that MSG is "safe" appear to be flawed. Some, particularly those in which MSG and/or aspartame are used in placebos, appear to be fraudulent.7

We are aware of no person, institution, or agency, that has claimed that MSG is "safe," that does not have close ties to the food and/or drug industries, or that has not been remunerated by them. In 1992, the FDA appointed both Andrew G. Ebert, Ph.D., chairman of the International Glutamate Technical Committee (IGTC), and Kristin McNutt, Ph.D., paid spokesperson for the IGTC, to the FDA Food Advisory Committee. Dr. Ebert is (or was) also an official "Observer" at the World Health Organization. In 1992, the FDA funded "an independent study" conducted by the Federation of American Societies for Experimental Biology, with Expert Panel members including four people with ties to the glutamate industry. Steve Taylor, Ph.D., who is (or was) The Institute for Food Technologists' Communicator on the subject of MSG has been a paid spokesperson for the IGTC for years.

Trade associations that represent glutamate industry interests include the International Food Information Council (IFIC) and the International Life Sciences Institute (ILSI). IFIC actively fought the presentation of a "60 Minutes" program on safety/hazards of MSG in 1991, and presently offers packets of materials that pretend to demonstrate that MSG is "safe." The IFIC packet includes a list of speakers who will attest to the safety of MSG. The American Academy of Allergy and Immunology is one of the organizations that has developed materials jointly with IFIC or IFIC's foundation. Their brochure entitled "Understanding Food Allergy" includes such false information as "Whenever MSG is added to food, it is listed on the label as monosodium glutamate." The FDA has also developed a brochure jointly with IFIC.

In 1994, IFIC commissioned a review of the book Excitotoxins: The Taste that Kills written by Russell L. Blaylock, M.D. Blaylock warned that MSG probably contributes to brain tumor and neurodegenerative disease such as ALS, Alzheimer's disease, and Parkinson's disease. The review was done for IFIC by Jonathan Pincus, M.D., who, it would appear, did not read Blaylock's book. Dr. Pincus' research has, in part, been supported by ILSI. ILSI
has also provided grant money to The Food Allergy Network. Dr. Steve Taylor, mentioned earlier as being a paid spokesman for the glutamate industry, is a member of The Food Allergy Network Medical Advisory Board. The Food Allergy Network is a nonprofit organization that claims as members both the FDA and the U.S. Department of Agriculture.

Misleading and Deceptive Use of "No MSG" on Product Labels

Manufacturers are acutely aware that, in general, consumers would prefer not to have MSG in their food. Some have responded by using "clean labels," i.e., labels that do not reveal that the food contains MSG. Others advertise "No MSG," "No MSG Added," or "No Added MSG," even though their products contain MSG.

Advertising "No MSG," "No MSG Added," or "No Added MSG" "has been found to be false and misleading under section (403)(a)(1) of the Federal Food, Drug, and Cosmetic Act when the label also lists any hydrolyzed protein as an ingredient since it contains MSG." (The underlining is the author's.) Thus, to advertise "No MSG," "No MSG Added," or "No Added MSG" when there is MSG in a product is illegal.

At one time, the FDA regulated the illegal use of the term "No MSG Added," with both a Regulatory Letter and threat of seizure and injunction in case of non-compliance. However, we know of no similar enforcement since 1990. It would appear that because food processors and manufacturers are comfortable in the knowledge that the FDA will do nothing to regulate the deceptive and misleading use of these terms, labels sporting such claims have proliferated.

Clearly, since it is false and misleading to claim "No MSG" on a product label when MSG is present as a natural constituent of an ingredient, or otherwise, any such claim must be substantiated. Those making such claims should be able to demonstrate, through valid tests for MSG content, that there is zero MSG in their end product.

Even if one could assume that a particular label reflected the ingredients actually in the product (which one can not), analysis of product labels to determine the presence of MSG would not be satisfactory, and will not substitute for analysis of end product. The number of products/ingredients/substances that contain MSG is not finite, i.e., new products that contain MSG are invented and/or renamed every day. To keep track of them would be virtually impossible. Moreover, MSG can be freed from protein during processing or manufacture given appropriate conditions. Any ingredient that contains a bit of protein can be hydrolyzed if hydrochloric acid, enzymes, heat, and/or any other substances or conditions are present that cause glutamic acid to be separated out of its host protein. Therefore, it would be impossible to tell whether or not there was MSG in a product by virtue of reading the names of the ingredients put into it.
The only way to determine whether or not there is MSG in a product is to measure the amount of MSG in its end product.

There are tests for measuring free glutamic acid. The AOAC Official Methods of Analysis (1984) gives a method. Daniels, Joe, Warner & Diachenko of the US Food and Drug Administration reported on a liquid Chromatographic Determination of Monosodium Glutamate in Foods in abstract form at the AOAC meeting in Cincinnati, Ohio, August/September, 1992. There are others.

The burden of proof for a claim about the absence of MSG must lie with those making the claim. If one can't test, and thereby prove, then one can't make a claim.

REFERENCES

0 Adrienne Samuels, Ph.D., Truth in Labeling Campaign, P.O. Box 2532, Darien, IL 60561
7 Samuels, A. Food and Chemical Toxicology Letter to the Editor (in press)
8 Free form glutamic acid that occurs in food as a consequence of manufacture.