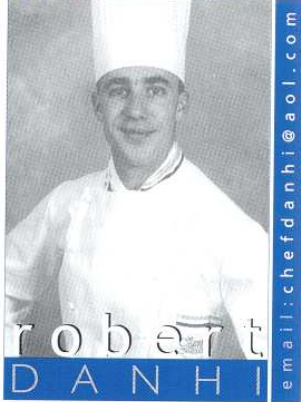


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MSG AND GLUTAMIC ACID

AN IMPARTIAL ASSESSMENT

MONOSODIUM GLUTAMATE, COMMONLY REFERRED TO AS MSG, IS A HOT TOPIC ACROSS THE GLOBE. ALTHOUGH WE NEITHER RECOMMEND NOR DISAPPROVE OF ITS USE, GAINING AN UNDERSTANDING OF NATURE'S GLUTAMIC ACID, HOW IT CONTRIBUTES TO THE DEVELOPMENT OF FLAVOR AND WHERE IT CAN BE FOUND IN SIGNIFICANT AMOUNTS CAN HELP YOU CREATE MORE FLAVORFUL FOOD.



WHAT ARE MSG AND GLUTAMIC ACID?

MSG is known as 'wei jing' in China, 'Aji-no-moto' in Japan, 'vetsin' in Vietnam, and most often sold in America under the label 'Accent'. Glutamic acid is one of the 20 amino acids that make up protein. Our bodies actually produce glutamic acid - about 50mg daily. MSG is the sodium salt of glutamic acid $C_5H_9NO_4$ (Glu). Amino acids that serve as neurotransmitters include glycine, glutamic and aspartic acids, and gamma-amino butyric acid (GABA). Glutamic acid and GABA are the most abundant neurotransmitters within the central nervous system, and especially in the

cerebral cortex, which is largely responsible for such higher brain functions as thought and interpreting sensations.¹

MSG is commonly produced through a fermentation process of tapioca starch, corn and sugar or molasses from sugar cane or sugar beets. Many believe that MSG causes adverse reactions such as numbness, heart palpitations, headaches, chest pains and asthma attacks, and is often referred to as 'the Chinese restaurant syndrome.'

According to the American College of Allergy, Asthma and Immunology, it is not considered an allergen. Also the US Food and Drug Administration has not found any serious, long-term health consequences from consuming MSG. Since 1959, it has been grouped in the GRAS (Generally Recognised as Safe) category of food additives, as is sugar, salt, pepper, baking powder and vinegar. Some maintain there is no such thing as 'the Chinese restaurant syndrome,' but it is actually a mistake in identity, attributing the alleged reactions to the high levels of sulfites and histamines that are present in some Chinese food.²

HOW DO THEY AFFECT FLAVOUR?

It is only recently that scientists have come to an agreement that the tongue not only perceives sweet, sour, salty and bitter, but also a fifth taste

sensation called *umami*, roughly translated as savory or meaty. It was the Japanese professor Kikunae Ikeda of the University of Tokyo that first used the term *umami* in 1908. He is credited with isolating the glutamate in the Japanese stock, *dashi*.

To affect flavor, the glutamate must not be bound to other amino acids, hence the term 'free amino acid'. The amount of free amino acid increases as fruits ripen, meat ages, and through fermentation, resulting in an improvement of flavor during these processes. It is believed that glutamate harmonises especially well with foods that contain sour and salty components, but not so much with sweet or bitter products. I find one of the most noticeable factors that affect a diner's experience with foods that have a high 'umami factor' is longevity of flavor. Not only are flavors more full but they also stay on the palate for an extended time. Sweet, salty, sour and even bitter dissipate relatively quickly, but *umami* outlasts them all.

WHERE CAN GLUTAMATES BE FOUND?

Naturally occurring glutamate is found in both plant and animal proteins and in many varieties of foods that we take for granted. (Refer to the chart for amounts in some

MSG and Glutamic Acid – New Asia Cuisine and Wine Scene

common items.) Fermented fish sauce, similar to the sauces used in modern day South-East Asia, were consumed in ancient Greece and Rome. The fermentation process creates a sauce which has a high free glutamate content. Innately we have an affinity for sweetness and *umami*³; of the 20 amino acids in breast milk, glutamic acid is the most abundant. Processed foods profit from glutamate's taste when they add hydrolysed proteins, sodium or calcium. Even ingredients used for natural flavors such as maltodextrin, malt extract and whey protein contain significant amounts of glutamate.

FREE GLUTAMATE CONTENT

Food Item Per 100 grams (3 1/2, oz.)	Free Glutamate (Milligrams)
Cow's Milk	2
Human Breast Milk	22
Eggs	23
Beef	33
Fish (Mackerel)	36
Chicken	44
Potatoes	102
Corn	130
Oysters	137
Tomatoes	140
Broccoli	176
Mushrooms	180
Peas	200
Grape Juice	258
Walnuts	658
Soy Sauce	1090
Parmesan Cheese	1200
Roquefort Cheese	1280

Source: www.M.S.G.facts.com, *The Glutamate Association*, Washington DC, USA 202.783.6135

CREATING MORE FLAVORFUL FOOD

From a chef's perspective there are many ways to maximise flavors without adding MSG. The first simple step is to use ingredients that are naturally high in free glutamates – of which mushrooms are at the top of our list. Through our cultivating of mushrooms, we often have an abundance of shiitake and oyster mushrooms, and we dry many of them to intensify their flavor and preserve them for the months to come. Later, rehydration of these mushrooms will yield a wonderfully

flavorful liquid. We use this non-fatty, full-flavored infused water as a base for stocks and soups. We even like to simmer vegetables or poach proteins like fish and chicken in this liquid. Also highly valued is the mushroom powder, which you can use in a variety of ways, including coating fish, manufacturing 'chopstick' garnishes for appetisers, salads or soups, and using it to replace one quarter of the high-gluten flour in pasta. Another idea is to rub a pork loin with garlic, cracked black pepper and mushroom soy sauce, then roll in the mushroom powder before roasting.

ROOM FOR DISCUSSION

But the question still remains: should you use MSG when you cook? That is a decision for each chef to make. Just like any other ingredient, it warrants a clear understanding of what it is, where it's from and how to use it best. Most prepared condiments as well as most pre-made stocks contain MSG, but there are alternatives available. You might want to try incorporating ingredients that have naturally high amounts of glutamates, but if you do choose to use MSG, remember that just like any other ingredient, it should not be used excessively. **RD & Estrellita Leong**

"Neurotransmitter," *Microsoft® Encarta® Encyclopedia 99*, © 1993-1998 Microsoft Corporation. All rights reserved.

² Maeder, Thomas 2001. *A Clean Bill of Health*. www.redherring.com

³ Maeder, Thomas 2001. *A Clean Bill of Health*. www.redherring.com

For further information, visit:

www.ific.org, www.M.S.G.facts.com or
www.truthinlabeling.org

MUSHROOM POWDER

Makes 1/2 cup

Ingredient

56g dried mushrooms (i.e. shiitake, morels, porcini)

Method

- 1 Bake the dried mushrooms for three minutes in a 175°C / 350°F oven.
- 2 Cool to room temperature.
- 3 Transfer to spice grinder, mini-food processor or blender. Process until powder is created.
- 4 Store for up to one month in an airtight container.

