

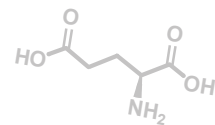
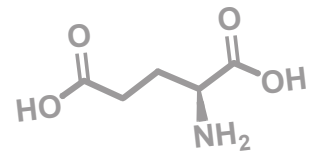
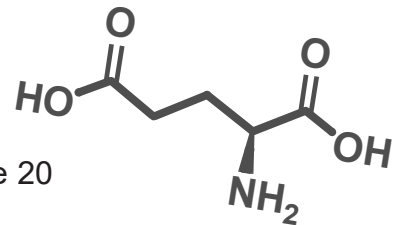
# Glutamate in the Kitchen

## Glutamate: The “G” in MSG

Glutamate is the most abundant amino acid in nature and one of the 20 amino acids that make up protein.

In addition to being present in virtually every protein in the body, glutamate plays an important role in amino acid metabolism and is necessary for the synthesis of key molecules, such as glutathione.

While our bodies produce about 50 grams of glutamate each day, we also get glutamate from many dietary sources. The average person consumes between 10 and 20 grams of glutamate each day from protein-containing foods. Almost 95 percent of the glutamate we eat is quickly metabolized by the cells lining the digestive tract, where it fuels their normal function.



## Free Glutamate = Savory Umami Taste!

When it comes to glutamate, there is an important taste distinction between “free” and “bound” glutamate, both of which exist naturally in our diet and our bodies.

- Free glutamate is considered “free” because it isn’t part of a protein chain. This allows it to bind to glutamate receptors on the tongue where it imparts a rich, savory umami taste.
- Bound glutamate, found in native proteins (i.e. proteins that haven’t been hydrolyzed), does not bind to the glutamate receptor on the tongue and therefore does not impart an umami taste.

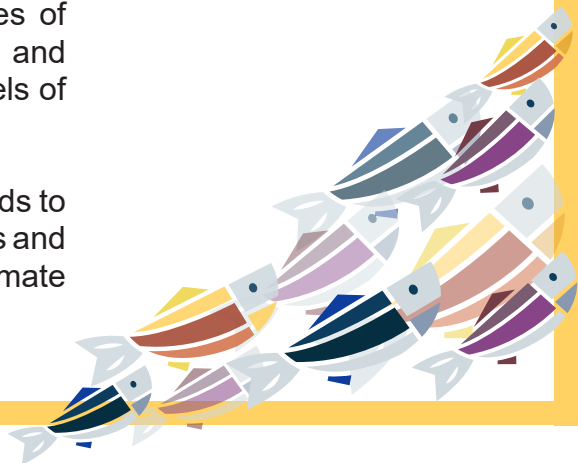
**From a culinary application standpoint, more free glutamate means more umami taste!**



## Free Glutamate in Savory Foods

Many foods naturally contain free glutamate, including many types of meat, fish, cheese, fruits and vegetables. Fermentation, ripening and aging all promote hydrolysis of proteins and therefore increase levels of free glutamate.

Additionally, monosodium glutamate (a source of free glutamate) adds to the flavor of some of America’s favorite foods, like potato chips, soups and salad dressings, contributing anywhere from 25 – 1,000 mg of glutamate per serving, depending on the serving size and the food item.



## Do You Taste the Umami in These Foods?

These are just a few popular foods that contain free glutamate. Remember, it's the free glutamate in foods that elicits the savory, umami taste response.



**TOMATO (0.5 CUP)**.....220 mg



**CURED HAM (3 OZ)**.....285 mg



**SOY SAUCE (1 TBS)**.....65 – 200 mg



**ROQUEFORT CHEESE (1 TBS)**.....110 mg

**CORN (0.5 CUP)**.....90 mg

**PARMESAN CHEESE (1 TBS)**.....60 – 85 mg

**BROCCOLI (0.5 CUP)**.....80 mg

**GREEN PEAS (0.5 CUP)**.....80 mg

**NAPA CABBAGE (1 CUP SHREDDED)**.....75 mg

**DRIED SHITAKE MUSHROOM (0.5 CUP)**....15 mg



**Fact:** Infants consume up to 145 mg/day of free glutamate in breast milk!

## Glutamate is Glutamate

Monosodium glutamate (MSG) separates into sodium and glutamate when it's exposed to water in foods or saliva in the mouth, which is why the body cannot distinguish between the glutamate naturally present in foods (such as Parmesan cheese) and added MSG.

## Good Taste is Global

Because foods that contain free glutamate add a savory umami taste to popular dishes, chefs and home cooks often rely on such ingredients to enhance dishes, whether or not they realize the science behind their strategy.

MSG is umami seasoning and the simplest, purest way to add umami to food. Therefore, it's no surprise that MSG can be found in kitchens around the globe – from Tokyo to Brazil – as a well-loved ingredient that enhances recipes while keeping sodium levels in-check.



For more information, please visit [www.KnowMSG.com](http://www.KnowMSG.com)

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