

Newsletter

September 2006

Salt, Tomatoes and More

People in many parts of the world are being advised to cut down on their salt intake. In this edition of the IGIS Newsletter, we look at a familiar ingredient and how glutamate can help us reduce the amount of salt we eat. There is also a report on why vine tomatoes are tastier plus a tempting Vietnamese recipe for you to try...

The World's First Seasoning

Salt is an essential nutrient without which the body cannot function. All bodily fluids contain sodium chloride (otherwise known as common salt), especially fluids outside the cells, such as blood. Human blood contains just under 1% salt.



Sodium helps us to maintain the right balance of fluids in our bodies, it enables us to transmit nerve impulses and it influences the contraction and relaxation of muscles.

The kidneys regulate the amount of sodium kept in the body. When sodium levels are low, our kidneys conserve sodium. If levels are high, they excrete the excess amount in urine.

The role of salt in food

Salt is a basic taste along with sweet, bitter, sour and umami. It is the world's oldest known seasoning and adults and

children have an inherent liking for this nutrient, probably reflecting the body's need for salt to survive. Salt is used in food processing both for taste and for preservation. It is also used in cooking and at the table where it brings out natural flavors, making foods more palatable.



Due to its flavor-enhancing properties, salt is routinely added to processed foods such as soups, sauces and ready meals, which can represent 75% of our total sodium intake. Almost everyone eats processed foods.

Even people who make many of their own meals from scratch will usually buy foods such as bread and biscuits, which can be high in salt.



A further 15% of our sodium intake comes from salt added during cooking and at the table. Only 10% of our intake actually comes from foods naturally rich in salt.

Food	Sodium Content mg per 100g
Minestrone soup	6,400
Bacon, back, grilled	2,700
Cornflakes	1,100
Table Salt	2,400 per teaspoon
Glutamate	700 per teaspoon

Why is salt a health issue?

High levels of dietary salt increase the risk of high blood pressure – hypertension. If

our kidneys can't eliminate enough sodium, the sodium starts to accumulate in the blood. Because sodium attracts and holds water, the volume of blood increases, putting a strain on the arteries and forcing the heart to work harder. This can lead to cardiovascular diseases. Concern about sodium intake has been fuelled by evidence that it can triple the chance of developing heart disease or having a stroke. In England alone, high blood pressure contributes to 170,000 deaths a year. Everyday 26 million people in Britain eat more than the recommended daily allowance of 2.3g of sodium (6g of salt).

Challenge of reducing salt

The World Health Organization and numerous public health authorities across the world have gone to great lengths to encourage people to reduce the amount of salt in their diets.

The Food Standards Agency in the United Kingdom has published voluntary salt reduction targets for food manufacturers and retailers to encourage a reduction in the amount of salt in a wide range of processed foods. The targets apply to salt



levels in the 85 food categories that contribute most to the amount of salt in our diet. These include everyday

foods such as bread, bacon, ham, breakfast cereals, cheese and convenience foods such as pizza, ready meals, savoury snacks, cakes and pastries.

The American Medical Association (AMA), a group representing 250,000 doctors, overwhelmingly agreed to support a campaign targeted at restaurants and processed foods manufacturers to halve the amount of sodium in their foods during the next 10 years.

The French Food Safety Agency (AFSSA) has formally endorsed a 20% reduction in salt concentration of processed foods over 5 years or a 4% reduction each year in average sodium intake. The manufacturers of bakery products are



hoping to reduce the amount of salt added to their products by 5% per year within 5 years.

In Australia, the National Heart

Foundation has claimed that adoption of its 'Tick' approval program standards by a leading breakfast cereal manufacturer led to the removal of 235 tons of salt every year from people's diets.

In Hong Kong, the Consumer Council is encouraging people to read labels for salt content, to reduce their intake of foods that are high in salt and to use less salt in cooking.

Glutamate can help people eat less salt

The umami taste is always present in foods that contain high levels of glutamate. Products naturally rich in glutamate have been used for many years to accentuate the savoury nature of other foods. Umami heightens sensitivity

towards saltiness and lessens our awareness of sour and bitter tastes. According to Elizabeth David, author of *Spices Salt and Aromatics in the English Kitchen*,



parmesan cheese is "possessed of remarkable seasoning powers". In fact, 100g of Parmesan cheese contains 1200mg of free glutamate. Its umami nature adds excitement to bland foods such as pasta, and for some dishes parmesan is a good alternative to table salt.

Contrary to popular belief, monosodium glutamate does not contain high levels of sodium. A teaspoon of monosodium glutamate contains 700 mg of sodium compared to 2,400 mg in the equivalent amount of ordinary table salt. What's more, the amount of monosodium glutamate used to season savory foods is approximately one tenth that of salt. By using a small amount of monosodium glutamate in conjunction with a decreased level of salt, sodium intake can be reduced by over 90%.

FOOD MYTHS

Chinese Restaurant Syndrome

"Chinese restaurant syndrome" is a combination of symptoms that include burning, flushing, tingling and tightness – symptoms that some people claim to experience after eating a meal from a Chinese restaurant. There is no evidence that monosodium glutamate is the cause and Dr. Graham MacGregor, professor of cardiovascular medicine at the University of London, believes it is the "excessive amounts of salt in the food and not the monosodium glutamate." New reports that focused on the salt content of popular Indian and Chinese meals have revealed that almost two thirds (64%) of the sampled Chinese meals and over half (52%) of the Indian meals contained more salt than the recommended daily limit of 6g.

A further hypothesis is that the symptoms attributed to MSG are actually a reaction to other ingredients in the food, such as spices or shellfish which are well known allergens. Spices that cause such reactions include those belonging to the *Umbelliferae* family, such as coriander, a spice widely used in Indonesian cuisine.

Tomatoes – Healthy and tasty

Cutting down on salt is only part of eating healthily. Eating a healthy diet that is high in fruit and vegetables is just as important for maintaining a healthy heart and body. As a source of vitamins, minerals, antioxidants and fibre, fruit is one of the keys to eating well.

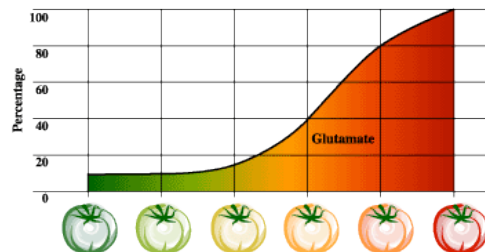
Heston Blumenthal and his team at The Fat Duck restaurant have joined forces with Don Mottram at the University of Reading to investigate which part of the tomato has the most umami. Umami levels are quantified by measuring the absolute



concentrations of glutamate and the ribonucleotides IMP (inosine 5'-monophosphate) and GMP (guanosine monophosphate). Initial results show that different ways of growing tomatoes and the different varieties contribute to the varying levels of taste compounds. For example, vine-ripened tomatoes have much higher levels of umami than tomatoes that have been picked green and gas-ripened, and are therefore much tastier.

Christopher Young, food research manager at The Fat Duck, noted that the highest levels of glutamate and ribonucleotides were in fact in the seeds of the tomato. "What we suspect is, as the tomato is developing, this tissue is gaining the nutrients, proteins and amino acids, and those are going to provide the umami content later on." We already know that green tomatoes contain around 20 mg/100g of free glutamate, whereas ripened tomatoes contain more about 13 times this amount (260 mg/100g).

Glutamate in a ripening tomato



The graph shows how glutamate levels in tomatoes rise during the ripening process to over 100 milligrams per 100 milliliters of juice

O Serviço Internacional de Informação sobre o Glutamato

A new language has been added to the IGIS web site. As well as English, German and Spanish, the International Glutamate Information Service is now available in Brazilian Portuguese, providing a source of reliable information to a country with over 185 million people. Just click on www.glutamate.org or www.msg.ws.

Esperamos que a sua visita ao nosso site seja interessante e útil!

PRESS WATCH



Umami is a word that is fast working its way into wine vocabulary.

Experts such as Tim Hanni have been investigating the umami taste in wine and have been educating people about umami and wine pairing.

In an article that appeared in *Fine Expressions*, a consumer drinks magazine which explores the world of premium wines, Stuart Walton investigates the science behind umami in wine.

The umami levels of a wine depend on the amino acid content. When it is made, wine only contains a small amount of glutamic acid (0.1 - 0.4 grams per liter), but its presence is enhanced during fermentation, resulting in significant quantities of glutamic acid in the finished product. Stuart Walton explains that the maturation period of a wine is essential to its flavour – "The longer a wine has been in contact with the deposits created by its secondary fermentation in the bottle, the richer and rounder its flavor will be."

The amino acid content of sake, Japanese rice wine, is considerably higher than that of other wines, giving it a distinctive umami taste. Most sake has an amino

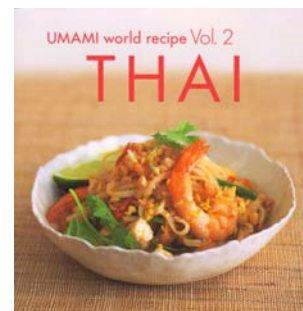
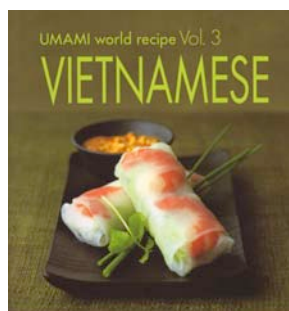


acid content of 0.8 to 1.2 grams per liter, which is created during the process of fermentation when the yeast cells feed on the starch from the rice. The high amino acid content is a result of the longer fermentation process, which lasts up to one month for sake, compared with only eight to fifteen days for other wines. This longer process allows for the production of up to five times more amino acids than wine.

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BOOK REVIEW

Last year saw the publication of the first in a series of recipe books created by IGIS and The Umami Information Centre. The first volume focused on Japanese cuisine, and now we can sample the delights of genuine Vietnamese and Thai cuisine. Each recipe utilises the magic flavor-enhancing qualities of local products in combination with umami seasoning to create an intense umami experience.



The following is an example of a recipe from the Vietnamese edition:

FISH SIMMERED IN CARMEL SAUCE

500g fish fillet (catfish or featherback) cut into 5cm squares.

100g sugar

80ml fish sauce

10g ground white pepper

1 clove garlic, chopped

1 red chilli, chopped

2 small onion roots

1 teaspoonful umami seasoning

1. Caramelize the sugar with a little water.
2. Place the fish, caramel, fish sauce, white pepper, garlic, red chilli, spring onion roots and umami seasoning into a flameproof clay pot. Leave to marinate for 1 hour.
3. Place the clay pot over a low heat. Cover and cook for 20 mins until the fish is soft and the sauce is thick and golden. Keep turning the fish while cooking.
4. Serve hot with steamed rice.