

## Newsletter

October 2007

In this edition of the IGIS Newsletter, we continue to explore new developments and insights in the world of taste and umami. This includes a look at finding umami in sake, and how different types of sake can be matched to different foods for synergistic effect. We also have various reports on recent events around the world and instead of a 'press watch', this edition of the newsletter features a 'media watch' section where two recent television broadcasts mentioning glutamate are reviewed. There is also our usual book review, this time looking at an interesting new book about pairing food with sherry.

### Finding umami

In the last edition of the IGIS Newsletter, we discussed recent scientific research that has been carried out into the mechanism of taste and how we detect amino acids such as glutamate. Ongoing research of this sort is helping food scientists and chefs to create more umami depth and enhance our enjoyment of food. An interesting experiment was recently carried out to determine how genes can affect sensitivity to different types of taste. This involved 109 pairs of twins who took part in taste tests to detect sour and salty tastes. The research found that while genes play quite a large role in tasting sourness, the ability to taste saltiness seems to have little or no genetic component. It would be interesting to set up a similar test looking for the umami taste! Knowing that genes can influence taste perception means that scientists may one day be able to identify the actual genes involved and therefore manipulate

the taste of individual diets to help encourage healthy eating. The report has been published online for an upcoming issue of *Chemical Senses*<sup>1</sup>.



Looking specifically at the umami taste, an interesting article by S.L. Drake and colleagues was published at the end of June on the website of the *Journal of Food Science*<sup>2</sup>. Entitled 'Sources of Umami Taste in Cheddar and Swiss Cheeses', the study aimed to identify the compound(s) responsible for umami taste in four Cheddar and four Swiss cheeses. Seven different compounds were quantified in the cheeses and sensory analysis revealed that, of all of these, glutamic acid played the largest role in the umami taste of both Cheddar and Swiss cheeses. The paper states that this knowledge "will aid in the identification of procedures to enhance formation of this taste in cheese".

<sup>1</sup> Wise et al: Twin Study of the Heritability of Recognition Thresholds for Sour and Salty Taste; *Chemical Senses*; Published online 10 July 2007; doi:10.1093/chemse/bjm042

<sup>2</sup> Drake et al: Sources of Umami Taste in Cheddar and Swiss Cheeses; *Journal of Food Science*; Published online 28 June 2007; doi: 10.1111/j.1750-3841.2007.00402

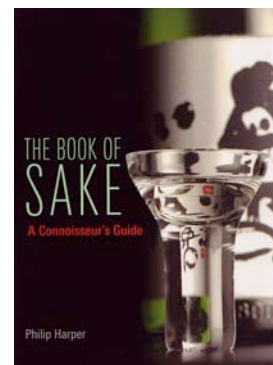
The search for umami continues with a new study recently reported in the Australian newspaper *Queensland Country Life*. The article on 2 August highlighted a study that is being conducted by the National Livestock Farmers Co-op Federation in Japan to determine the umami source in Wagyu beef (the meat from Wagyu cattle is predisposed to intense marbling and has an enhanced flavor). The fifth taste is said to be regarded as one of the most important features of the meat and the study will analyze the fatty acid, amino acid and nucleic acid content. The cattle are said to enjoy beer and sake as part of their diet, which may explain the umami-rich flavor of the meat...



### The right combination

Awareness of umami in alcoholic beverages is also starting to grow. Two recent books that look respectively at sake, the Japanese alcoholic beverage made from fermented rice, and sherry, the fortified wine from Jerez in Spain, reveal that the glutamate content of these drinks plays an important role in their depth and flavor and hence in their successful pairing with foods. Philip Harper's *The Book of Sake: A Connoisseur's Guide* (Kodansha International, 2006) describes all the types and styles of sake, how to distinguish their distinctive flavors and how to match sake with food to make the most of its versatility. The book features a flavor guidance chart: the 'Sake Flavor Chart', developed by Haruo Matsuzaki, which arranges sake into groups by flavor, from light and fresh through soft and mellow to full-bodied and rich. The chart also advises at what temperature and at what stage of the meal the different types of sake should be served.

The umami taste is described as 'the soul of sake flavor' and Harper links this to the rich amino-acid content. Since the amino acids in sake then combine with the glutamate in umami-rich food, a synergistic effect is produced. However, there is a range of umami intensities in sake. Aged sakes such as koshu and jukuseishu can have a subtle touch of umami flavor or, on the other hand, what Harper describes as a 'sublime umami-driven depth'. Harper advises that the 'gutsy umami' tastes of kimoto, yamahai or junmai varieties are best paired with strongly flavored food as they may overpower the delicate taste of lighter dishes. Umami-rich varieties of sake are specifically recommended for pairing with dishes that are themselves rich and savoury. Types of food mentioned in Harper's book include meaty stews such as Japanese sukiyaki, meats in rich sauces and stronger flavored dishes including some Chinese food. Their acidity also combines well with oily food such as tempura (seafood or vegetables fried in batter). As Harper rightly says, 'good food and good drinks are wonderful things and have the captivating ability to combine to produce far more than the sum of their parts'.



Continuing on a food-pairing theme, the recently published book *The Perfect Marriage: The Art of Matching Food & Sherry Wines from Jerez* (Simon & Schuster UK Ltd., 2007) is reviewed in our book review section on page four.

## NEWS & EVENTS ROUNDUP

### Events

Some interesting glutamate-related events have been taking place in different parts of the world:

#### Children's Food Festival, 14 & 15 July, Abingdon, UK



Organized by the Northmoor Trust, a charity that promotes countryside conservation, this educative food festival was aimed at children of all ages.

Featuring a range of demonstrations by celebrity chefs and interactive workshops, it included a talk by Professor Jeya Henry, Head of Food Sciences and Nutrition at Oxford Brookes University and Consultant to the WHO. He gave a talk entitled 'Why we like what we eat. The Science and Art of Eating', which introduced children to the fifth taste and what types of food they can find it in. The talk included tastings and the children were very receptive to all the information!



#### Monosodium Glutamate Nutritive Perspectives Seminar, 24 July 2007 Lagos, Nigeria



The Vanguard newspaper in Nigeria reported on this event, which featured various interesting presentations. Professor Takashi Yamamoto of Osaka University gave a lecture entitled "Scientific Background of Umami as a Key Component of Food Flavor", explaining the five tastes and the discovery of umami. Dr. Miro Smruga of the European Committee for Umami in Paris, gave a presentation entitled "Physiological Renaissance of Glutamate in Food", pointing out that many cultures today use free glutamate and other amino acids to improve the sensory quality of food. A wide range of organizations attended, including the Standards Organization of Nigeria and the National Agency for Food & Drug Administration and Control.

#### Umami – Exotic taste or world taste?, 18 October 2007, Adelaide, Australia



This exciting upcoming event in Australia is organized in association with the South Australian food and wine event 'Tasting Australia' (13-20 October 2007) and is sponsored by the Umami Information Center. The event invites participants to experience and learn about umami alongside the experts. For more details on speakers and how to book a place, please visit [www.umami.org.au](http://www.umami.org.au).

#### New language editions

The public International Glutamate Information Service website is now also available in Indonesian. The new version of the site can be accessed by going to [www.glutamate.org](http://www.glutamate.org) and clicking on Indonesia.

Furthermore, the Umami Information Center/IGIS booklet 'Umami: The World', which was originally published in English in 2004 and French in 2006, has now also been produced in Japanese, Spanish and Portuguese editions.



#### EAT-JAPAN

The latest edition (Vol. 2, Issue 2) of the EAT-JAPAN magazine is now available. Taking a comprehensive look at the most important Japanese ingredients and seasonings, it includes a special eight-page feature on konbu (kelp) which contains the highest naturally occurring levels of glutamate and forms an intrinsic part of the Japanese diet. It was in konbu that Kikunae Ikeda first identified glutamate as the source of the umami taste. Three top international chefs - Heston Blumenthal, David Zuddas and Yasuhiro Sasajima - share their philosophy on the role of konbu in enhancing their cuisine.





## BOOK REVIEW

As mentioned in the section on pairing sake with food, a recently published book looks in-depth at matching food to a variety of sheries. Entitled *The Perfect Marriage: The Art of Matching Food & Sherry Wines from Jerez*, the book has a foreword by Heston Blumenthal and contains fascinating tips and over fifty recipes from fifteen of Britain's top chefs, each with a recommendation for a sherry accompaniment.



The book focuses on the 'tapas' style tasting menu but flavors and influences in the dishes come from around the world. Blumenthal describes the joy of tasting-menus that stimulate the senses and he emphasizes the importance of accompanying such menus with wines. Sherry is a traditional accompaniment to tapas; its umami quality is of particular interest to Blumenthal who focused on this as part of his research into food matching: "Certain taste compounds that are found in sherry are also present in foods such as tomatoes, seafood and some meats, so it makes perfect sense that it has a role to play in uncovering this exciting new area of food science". He believes that "We are really only just beginning to scratch the surface of taste and flavor, but sherry genuinely encourages our receptivity to food, which makes it an ideal wine to accompany tasting".

This beautifully illustrated book is published by Simon & Schuster UK Ltd.

## MEDIA WATCH

Two interesting broadcasts about glutamate have been shown recently:

1) '**Geschmacksempfinden**' ('Taste Sensations') on 'Einstein'; shown on SF1, Switzerland, 17 May 2007



This episode of the popular science show, broadcast on one of Switzerland's main TV channels, included a feature all about taste. A taste expert explained that we have receptors for different tastes in all parts of the tongue and mouth. The discovery of umami was recounted and viewers were given instructions for a taste test, comparing the taste of umami, using glutamate on the tongue, with the taste of salt. The presenter explained that glutamate is not 'artificial' but occurs naturally in many foods.

2) **MSG Taste Test on 'Brainiac: Science Abuse'**; shown on Sky One, UK, 19 June



The show described as 'the science show where experiments are fun' featured a test to determine whether MSG really can make food taste better. The presenter gave a nice introduction to glutamate, explaining that it is the fifth taste of umami, discovered by Professor Ikeda in 1908. He then prepares two taste tests: one comprises a cake with added MSG and a cake with no MSG, the second is a soup with added MSG and a soup with no MSG. These are then taken out onto the street for people to try and rate which they prefer. In the two tests, the cake with no added MSG was preferred, with a score of 19 to 5. However, the soup with added MSG was preferred to the MSG-free variety, scoring 14 to 4. The presenter correctly concludes that while added glutamate contributes little to sweet foods, it certainly does make savoury foods taste better.