

Newsletter

December 2004

The IGIS is pleased to present our latest newsletter. This special edition focuses on the first Molecular Gastronomy Master Class held in Japan this year, providing a summary of the key topics discussed and information regarding the origin and use of umami. The newsletter also features new material recently produced by the IGIS. We hope that you enjoy this update and if you have any questions please contact us at enquiries@glutamate.org.

Molecular Gastronomy and the World of Umami

A Master Class in Molecular Gastronomy

In Summer 2004, Japan received its first insight into the exciting field of Molecular Gastronomy when a Master Class, bringing together world-renowned experts in the fields of science and food, was organized in Kyoto, the gastronomic centre for traditional Japanese cuisine. The term 'Molecular Gastronomy' describes the concept of using science to create new recipes and taste sensations, based on an understanding of how food, cooking and taste work at a molecular level. Focusing on this concept, the Master Class highlighted the benefits gained from bringing scientists and chefs closer together while reinforcing the importance of umami and its role in giving food its unique character. The following provides a summary of the key themes explored by the Master Class panellists.

In his keynote speech Yoshihiro Murata, owner and chef of the KIKUNOI restaurant in Kyoto and renowned expert in traditional Japanese Kaiseki cuisine, explained the importance of umami from his perspective. He emphasized how a light, pure umami taste is the goal in Japanese cuisine and is

indispensable in the preparation of traditional recipes, enhancing taste without making the food heavy, as the addition of butter or cream would in western cuisine. Murata believes that



a greater appreciation of the subtleties of umami taste by westerners would result in a healthier diet and fewer of the food related challenges which we face today. Murata demonstrated a new method for preparing dashi broth, which had

been developed as a result of repeated scientific experiments which proved the traditional method to be wrong. This highlighted the role that scientific analysis can play in the development of new culinary techniques and the benefits that can be gained from molecular gastronomy.

Murata's improved dashi

You will need: 1.8 litres of water, 50g of rishiri konbu, 30g katsuobushi. Heat the water and rishiri konbu to 60°C. Hold it at this temperature for one hour, before adding



shavings of katsuobushi. Then allow the mixture to steep. Often dashi is

cooked for too long at too high a temperature producing a cloudy broth. This recipe produces a fantastically clear stock with a delicious umami taste.

Gary Beauchamp, Director of Monell Chemical Senses Center in Philadelphia, and one of the leaders in the development of the scientific understanding of umami, empathised with Murata's view that there is a role in cuisine for

science. Dr. Beauchamp pointed out that the taste of food could be broken down into four components: taste, smell, irritation and texture and he concluded that it is the interaction of these components therefore that determines our perception of flavour. An experiment was conducted to demonstrate how our different senses interact to heighten our perception of flavour. If you pinch your nose and pop a jellybean in your mouth you will perceive a weak taste. However, let go of your nose and the flavour bursts in your mouth. This experiment highlights the relationship between taste and smell perception and the important practical implications that this relationship has for food developers.



Edmund Rolls, Professor of Experimental Psychology at Oxford University, is also at the forefront of establishing scientific understanding of umami. His research includes studies of the interaction of vision, learning and memory, emotion, smell and taste, and explores which parts of the brain respond to different complex taste and other food-related stimuli. In order to demonstrate the impact that visual stimuli have on our perception of food, Rolls related an experiment whereby tasting white wine, which had been coloured red, resulted in subjects describing the wine flavours using adjectives usually associated with red wine. Rolls believes that, by working together, chefs and scientists could not only develop new taste sensations but also combine sensory inputs to develop foods and diets which address specific challenges such as nutrient balance.

Heston Blumenthal, owner and chef of The Fat Duck restaurant in Berkshire, UK and recent recipient of a third Michelin star for his cuisine, emphasized the benefit of bringing together science and cooking with the aim of exploring new possibilities. For Blumenthal, questioning accepted methods of cooking, and validating these findings scientifically, facilitates the discovery of new recipes and cooking methods as well as new taste experiences and flavour combinations. Blumenthal reinforced how challenging



tradition is required in order to successfully develop a chef's repertoire and drive innovation.

Aside from promoting the benefits gained from the close collaboration of chefs and scientists, the Master Class also provided a platform for reinforcing the importance of umami and its role in giving food its unique character. Nobuyuki Matsuhisa, the chef and one of the owners of world-renowned restaurant NOBU, provided insights into the challenges of bringing traditional Japanese cuisine and culinary culture to an international restaurant. He emphasized the importance of umami in establishing Japanese cuisine as unique and in gaining international recognition of its character.

Kombu and the Taste of Umami

Essential features of Japanese cooking include dashi (a stock) to provide and enhance umami (taste). Dashi is made from seaweed (kombu) and dried bonito (katsubushi), and when added to other foods this delicate stock enhances their flavour. Dashi is used in Japanese cooking to add umami to boiled dishes and soups. Kombu is a brown algae. The kombu most commonly used as dashi ingredients are makombu, rishiri-kombu, rausu-kombu and Hidaka kombu, which are only harvested around Hokkaido island in Japan. From July to September, live kombu is harvested before being brought to shore where it is dried by the sun or hot air fans in drying chambers. The kombu is then allowed to mature for two years. Rich in glutamate, the kombu is then sold in markets to be used as an important ingredient for many dishes.

Umami in Western Cuisine

Despite being traditionally a Japanese taste, umami is also prevalent in western cuisine. Meat is an important source of glutamic acid and is fundamental to the production of flavour in western cuisine, with beef and pork forming the basis of classic sauces, stocks and soups. Smoked, cured, dried and aged meat is also rich in glutamate with the aging process liberating more glutamic acid and providing a stronger umami taste.

Dairy products, used extensively in western cuisine, are also foods which are high in glutamate. The harder and more aged the cheese the higher the content of glutamate and umami. It is therefore not surprising that it is mature cheese, such as parmesan, rich in

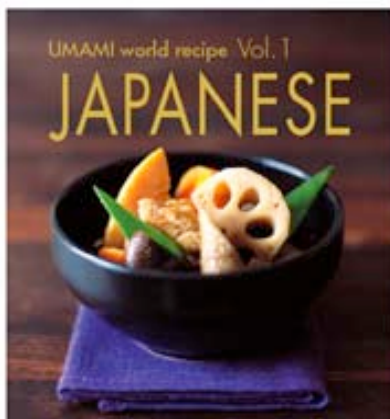
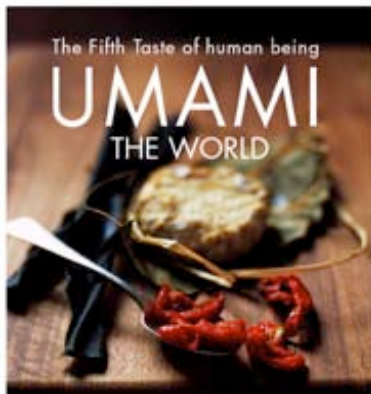
umami, which is used primarily for its seasoning properties. Of plant foods providing umami tomato and mushrooms are foremost, with many of the west's most popular foods containing these vital ingredients.



Some western chefs have restrained from using monosodium glutamate in their cooking, believing it to be unnatural or even unhealthy, yet they would not think twice before using soy or fish sauces, smoked hams, tomato sauce sprinkled with parmesan cheese or eating a slice of pizza full of glutamate-rich ingredients. Common to all these products is the presence of glutamates and the satisfying and mouth-filling taste of umami.

Umami Information and Recipe Booklets

The Umami Information Center and IGIS has recently published the first in a series of umami information and recipe booklets.



Editions published so far include 'Umami - The World' and a booklet of Japanese recipes.

Umami - The World introduces the taste of umami and its relationship with glutamate. The booklet provides background information on the discovery and history of umami and dispels the myth that this fifth taste is confined to Japan. The booklet contains a section on Western cuisine written by the renowned cookbook author and food historian, Elisabeth Rozin. There are also separate sections dedicated to Asian, and Japanese cooking, each of which highlights regional products that are naturally rich in glutamate. The booklet also emphasises how the taste of umami adds to the tastiness of foods from around the world.



The first edition in a series of recipes books has also been published. Volume 1 concentrates on Japanese cuisine and contains a series of delicious recipes each featuring umami seasoning. This book represents the first in a series to be published over the coming years - two more of which will be published in 2005. Each edition will feature the cuisine of a different country and will highlight local recipes that can be created and enhanced with umami.

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

GRILLED SALMON WITH GARLIC & GINGER PICKLES

4 pieces of salmon
 1tsp salt
 ½ tsp umami seasoning
 40g ginger
 ½ tsp ground garlic
 4 slices of lemon or lime

200ml water	} Pickle
50ml rice vinegar	
pinch of salt	
pinch of umami seasoning	

- 1 Rub the salt and umami into the salmon and leave overnight.
- 2 Slice the ginger, cut each slice into a leaf shape, make fine slits and pickle in the seasoned vinegar overnight
- 3 Rub the garlic powder into the salmon and grill or stir-fry both sides
- 4 Serve with lemon and sliced ginger



Umami and Molecular Gastronomy Movies

IGIS has recently produced two movies. The first is taken from the Molecular Gastronomy Master Class and provides highlights from the event. The movie shows a summary of each of the panellists' contributions and gives an excellent overview of the Master Class.

The second movie focuses on umami and provides detailed information about this natural flavour. The movie discusses how umami has won recognition from international chefs and acceptance throughout the world.

