



Umami, the Fifth Basic Taste: New Aspects of Its Role as a Food Flavor

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Preface

In Japan, *kombu* (a type of seaweed), dried bonito fish and *shiitake* mushrooms have been used for centuries to create a soup stock. In 1908, Professor Kikunae Ikeda identified a unique taste component of *kombu*, and he demonstrated that the active ingredient of the taste component is the salt of glutamic acid, i.e., glutamate. Since the taste of glutamate is quite different from those of the four basic tastes (sweet, salty, bitter and sour), he named the taste of glutamate “*umami*” (pronounced “oo-mah-mee”). Studies by other Japanese scientists revealed that the umami components in dried bonito and *shiitake* mushroom were 5'-inosinate and 5'-guanylate. Thus, three umami substances were found by Japanese scientists, and the concept of umami was well accepted in Japan. In the many years since the umami substances were found, the umami contents of foods were examined and it was established that the umami components are universally present in a large number of foods.

The existence of umami taste was not accepted in the U.S. and Europe for decades, and the umami substances were long considered to be only flavor enhancers. In 1982, an umami research organization was established in Japan and it began to conduct international umami symposia in the U.S. and Europe. Many important umami-related data obtained by psychophysical and electrophysiological studies have accumulated, and the receptors for umami taste were identified. Based on these data, umami was internationally recognized as the fifth basic taste in 1997.

Umami substances are abundant in popular foods in the U.S. and Europe such as tomato, cheese, raw ham and anchovy paste. Ordinary people have begun to pay attention to umami, and the consumption of Japanese foods the taste of which

is mainly umami has spread internationally. Nowadays, chefs who use foodstuffs containing umami substances are now frequently encountered in the U.S. and Europe.

A soup stock obtained from *kombu* contains only glutamate and aspartate, the latter of which has a weak umami taste. That is, the soup stock is a pure umami solution. The soup has a pleasant taste due to the umami substances. The essential components of crab-meat taste are three amino acids, sodium chloride, and umami substances, and the elimination of these umami substances leads to the loss of the crab-meat taste's deliciousness. This implies that umami substances are essential to the deliciousness of some foods.

In this book, the history of umami studies and the role of umami as a food flavor are described.

Contents

Chapter 1	Elements of Food Acceptability	1
Chapter 2	The Discovery of Umami Substances	13
Chapter 3	The Production and Decomposition of Umami Substances	19
Chapter 4	The Content of Umami Substances and the Synergism	25
Chapter 5	The Interplay of Umami, Amino Acids, and Sodium Chloride	33
Chapter 6	Umami is Recognized as the Fifth Basic Taste	43
Chapter 7	Umami Receptors	51
Chapter 8	The Physiological Roles and Metabolic Disposition of Dietary Glutamate	59
Chapter 9	The Spread of Umami Around the World and Present Method of Glutamate Production	65

