

LETTER

What's in a Name? Are MSG and Umami the Same?

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The Japanese word 'umami' has a long past. It was already in use during the Edo period (Tokugawa Shogunate) of Japanese history, which ended in 1868 (Mason, 1993). In Japanese, 'umami' often connotes a cognitive category (Yamaguchi and Ninomiya, 1998) of taste, or perhaps flavor, with definitions that include deliciousness, flavor, relish, gusto and zest (Inoue, 1983). In effect, the Japanese word 'umami' can denote a really good taste of something—a taste or flavor that is an especially appropriate exemplar of the flavor of that thing (Backhouse, 1978).

Recognition of a role for sodium salts of glutamic acid in flavor has a shorter history. In 1909 Dr Kikunae Ikeda reported the isolation of metallic salts of glutamic acid from a brown kelp [tangle, genus *Laminaria* (Guiry, 2002), 'konbu' or 'kombu' in Japanese] commonly used in Japanese cuisine, and recognition that the (mono) sodium salt of glutamic acid imparted a familiar and highly desirable flavor to foods (Ikeda, 1909; Murata *et al.*, 1985). Dr Ikeda noted that the flavor could be described as delicious, nice or palatable ('umai' in Japanese). It seemed to him to be related to his impressions when he ate meat or bonito (dried marine fish flakes; 'katsuobushi' in Japanese), and was based upon a taste that differed from generally recognized basic tastes. He accepted the suggestion that this taste could temporarily be called 'umami'. In a later publication, in English (Ikeda, 1912), he chose to use the description 'glutamate taste'.

The taste of monosodium glutamate (MSG) by itself does not in any sense represent deliciousness. Instead, it is often described as unpleasant, and as bitter, salty or soapy (Yamaguchi, 1998; Halpern, 2000, 2002). However, when MSG is added in low concentrations to appropriate foods, the flavor, pleasantness and acceptability of the food increases (Halpern, 2000). These differences illustrate the distinction between the taste of a single tastant and the effects upon flavor of tastants in a food (Lawless, 1996).

MSG is a tastant, as is salt (NaCl). We can study transduction mechanisms for NaCl or MSG, and peripheral and central gustatory neural responses, in a particular species, while recognizing that the gustatory mechanisms

and responses discovered in one species may be quite different from those in another (Halpern, 2002). For human responses to NaCl, we talk about salt taste, or saltiness. In similar fashion, for MSG it is appropriate to speak of glutamate taste, as Dr Ikeda did (Ikeda, 1912). Flavor, derived from human descriptions of foods and beverages, depends upon mixtures of tastants (and odorants) but represents aspects that emerge from the array of tastants and odorants, and their matrix (Halpern, 1997). In general, individual tastants are not described as delicious. In isolation, the taste of neither NaCl nor MSG is delicious. In similar fashion, naturally occurring tastants, such as potassium chloride or phosphate salts, amino acids like glycine, arginine and alanine, and nucleotides such as adenosine 5'-monophosphate, taken alone, are not described as delicious. However, these same tastants, combined in appropriate proportions with NaCl and glutamic acid (or MSG), yield the flavor of boiled crab (Konosu *et al.*, 1987), and may be characterized as delicious, perhaps with reports of 'umami'.

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