The role of dietary glutamate in food perceptions and preferences

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In addition to the commonly recognised basic tastes – sweet, salty, sour and bitter – there is now considerable evidence for the existence of a fifth basic taste, known as *umami*. This Japanese word, translated approximately as 'savoury deliciousness', refers to the quality of foods containing significant amounts of naturally-occurring glutamate, its sodium salt, monosodium glutamate (MSG), or 5'-ribonucleotides. *Umami* quality is ubiquitous in cuisines throughout the world. The status of *umami* as a unique taste derives not just from this quality being perceived as distinct from the other basic tastes, but also from evidence for the existence of both glutamate receptors within the tongue's taste cells, and cells within the brain which respond preferentially to the *umami* taste.

The addition of glutamate to suitable foods almost always improves flavour acceptability (1). Recent studies from our lab show that this effect is strong enough to be uninfluenced by attitudes towards MSG. Two groups, each of 60 consumers, answered a questionnaire about attitude to MSG in foods, and tasted two soups, one with and one without MSG. Despite generally having negative attitudes towards the use of MSG in foods, acceptability ratings for foods containing additional MSG was consistently higher than those without added MSG. This preference was uninfluenced by labels that indicated whether or not added MSG was present in the food.

Such strong preferences may derive from the ability of glutamate to act as a dietary energy source, similarly to sugars and fats. Subjects (N = 44) were given novel food flavours, one of which was paired with glutamate on several occasions. Subjects who received the novel flavour plus glutamate showed increased liking for the flavours, relative to no pairing, but only when the glutamate was consumed, suggesting the presence of energy conditioning similar to that found for sugar (2) and fats (3). Thus, it may be that our preference for additional glutamate in foods reflects the energy value that it provides, just as our preference for sweetness does.

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