

Taste enhancement of savoury food aiming to increase acceptance by an elderly cohort

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Diminished sensory ability, and specifically smell and taste deterioration caused by ageing or due to medication and illness, is one common factor which contributes to malnutrition within older adults⁽¹⁾. However, it has been shown from previous studies that flavour enhancement of food using monosodium glutamate and/or added flavours resulted in increased food intake among sick and healthy elderly individuals⁽²⁾.

The aim of this study was to increase the liking of food for older adults by enhancing the savoury (umami) characteristics. The novelty of this project lies in the optimisation of naturally occurring tastants at levels preferred by an elderly cohort. Initially, a variety of natural ingredients, such as fermented soy products (soy sauce and miso paste), yeast extract, shiitake mushroom extract and mycoscent (a natural flavouring which is a byproduct of mycoprotein) were used in order to increase the umami taste of minced meat samples. These samples were then offered to a group of older volunteers (*n* 32, age 62–83, mean 73) and they were asked to score their liking. There was no significant difference in consumer mean liking between the products, nor any correlation between liking and umami intensity.

To further intensify the umami taste of the minced meat samples, combinations of the soy sauce (Kikkoman) with mycoscent or shiitake extract or a commercial concentrated tomato extract (Santé, Lycored Ltd.) were prepared. The minced meat samples were evaluated by a trained analytical sensory panel (*n* 10) using quantitative descriptive profiling and, after appropriate ethics approval, by older volunteers (*n* 36, age 62–87, mean 71), who scored liking using a nine-point hedonic scale.



Fig. 1. Sensory attributes of minced meat.

Sample	Mean liking (1, dislike extremely; 9, like extremely)
Kikkoman + Shiitake	6.9 ^a
Lycored	6.8 ^a
Kikkoman + Mycoscent	6.9 ^a
Lycored + Kikkoman	7.0 ^a
Control	6.8 ^a

^aMean values with the same superscript letters were not significantly different (Nemenyi's procedure for non-parametric data; *P* < 0.05).

From the sensory evaluation of the samples it was found that there were significant differences (*P* < 0.05) in thirty-seven attributes among which the most important, as seen in Fig. 1, are umami taste, sweetness and bitterness, and flavour attributes such as beef stock, yeast extract and shiitake mushroom flavour. From the liking results the soy sauce plus tomato extract sample had the highest mean liking score, but there was no significant difference in mean liking. Considering the positive and negative comments made by the volunteers about the samples, the sensory profile and the liking scores, the soy sauce plus tomato extract sample will be taken forward to the next part of the study which includes the taste enhancement of a real food (cottage pie) served in the hospital.

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- Schiffman SS (2000) *J Nutr* **130**, 927S–930S.