Frequently consumed vegetables have almost no taste

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Introduction

Taste is a main driver in preferences and food choices. Humans are predispositioned to prefer sweet and salty tastes and reject bitter and sour tastes, therefore bitter taste is often thought to cause the rejection of vegetables by children.

Aim

The aim of this study was to describe the taste and fat sensation of 10 commonly consumed vegetables in the Netherlands and to investigate the effect of preparation method on vegetable taste.

Methods

A panel (n=9) trained in a modified Spectrum method assessed sweetness, sourness, bitterness, umami, saltiness and fattiness intensity of 10 vegetables commonly consumed in the Netherlands.

Cauliflower		Bell pepper	
Broccoli		French beans	
Leek		Tomato	
Carrot		Cucumber	
Onion		Lettuce	

Each vegetable was profiled for different preparation methods, namely raw, cooked and mashed. Reference solutions were available for the panel for each taste modality (not for fattiness) (table 1 & figure 1).

Table 1: Nature of reference solutions used for the Spectrum method

Reference solution	**Sweetness** % granulated sugar	**Sourness** % citric acid	**Bitterness** % caffeine	**Umami** % monosodium glutamate	**Saltiness** % salt
R1	2	0.05	0.05	0.12	0.2
R2	5	0.08	0.08	0.3	0.35
R3	10	0.15	0.15	0.7	0.5

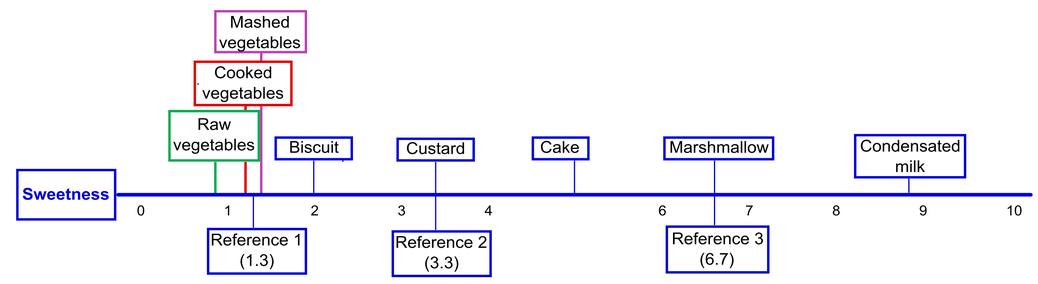
Results

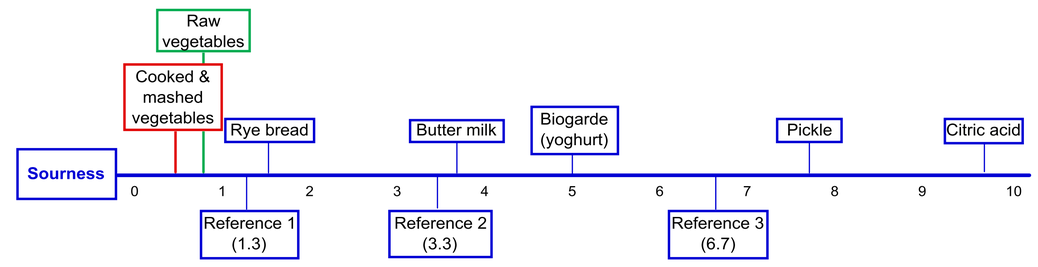
All tastes modalities and fattiness had low intensities (table 2 & figure 1). Overall, sweetness was the most intensive taste, followed by sourness, bitterness, fattiness, umami and saltiness. There were significant differences in taste intensity and fattiness between vegetables prepared by different methods.

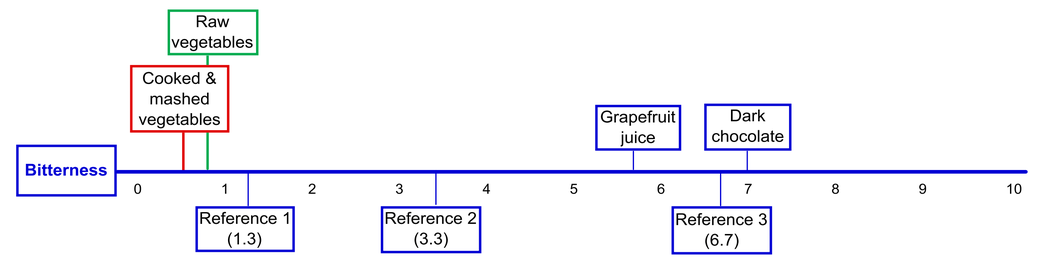
Table 2: Overall mean intensities and SD per preparation per taste and overall differences

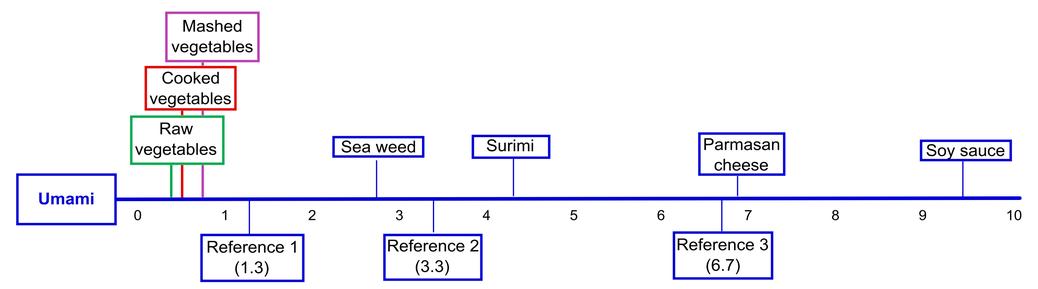
Preparation	**Sweetness**	**Sourness**	**Bitterness**	**Umami**	**Saltiness**	**Fattiness**
Raw	0.9 ± 0.6^{A}	0.8 ± 0.9^{A}	0.8 ± 1.4^{A}	0.4 ± 0.6^{A}	0.2 ± 0.3^{A}	0.3 ± 0.5^{A}
Cooked	1.2 ± 0.7^{B}	0.5 ± 0.7^{B}	0.5 ± 0.8^{A}	$0.5\pm0.6^{A,B}$	$0.3\pm0.5^{A,B}$	1.0 ± 1.3^{B}
Mashed	1.4 ± 0.8^{B}	0.5 ± 0.7^{B}	0.5 ± 0.8^{A}	0.7 ± 0.8^{B}	0.4 ± 0.6^{B}	1.1 ± 1.3^{C}

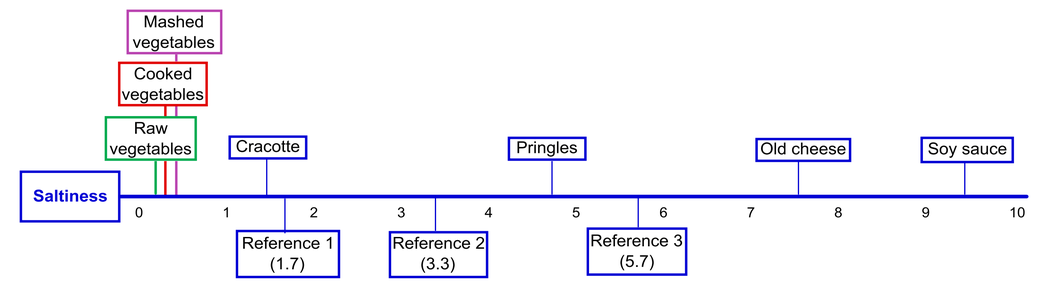
Significance $p<.005$











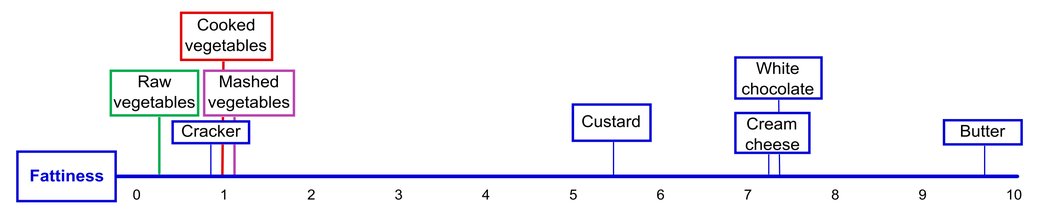


Figure 1: Mean taste and fattiness intensities of raw, cooked and mashed vegetables and position of reference solutions and references products on a 10cm line scale

Conclusions

- Frequently consumed vegetables have almost no taste
- Sweetness is the most intensive taste in vegetables, followed by sourness and bitterness, saltiness is the least intensive taste
- Vegetable preparation method influences taste intensity

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