SENSORY EVALUATION OF VANILLA DAIRY DESSERTS BY FREE CHOICE PROFILE

González-Tomás, L., Tárrega, A., Costell, E.
Physical and Sensory Properties Laboratory, IATA (CSIC). P. O. Box 73, 46100 Burjassot Valencia (Spain)

MATERIALS AND METHODS

Samples

Eight samples covering the commercial range in the Spanish market were purchased from local supermarkets. Five samples were formulated only with starch and hydrocolloids as thickeners and three also contained egg to provide a more home-made flavour. Samples were kept in refrigerator at 4±1°C prior to sensory analysis and all tests were performed within the shelf life period of each sample.

Sensory testing

A group of 30 consumers (14 men and 16 women) were recruited from the Institute staff. Repertory Grid Method (RGM) was used to generate an individual set of terms for each assessor. Four sets of three samples selected randomly from the initial group of eight were formed and each subject described similarities and differences among samples within each triad in his own terms (Fig. 1). Consumers were asked to generate terms concerning appearance, flavour and texture of the samples. The generated terms were listed by the interviewer on individual score sheets.

RESULTS AND DISCUSSION

Consumers generated globally 550 terms, with individual sets ranging from 13 to 28 descriptors and an average of 18. The most frequent terms used by consumers were vanilla flavour (77% of the participants), sweetness (67%), consistency (57%) and liquid texture (53%).

A three-dimensional solution adequately described most of the variance in the data (54.46%). Agreement among consumers was acceptable, with residual variances ranging from 0.09 to 0.60. Scaling factors ranged from 0.78 to 1.51. Residuals were very similar among samples, indicating also a good agreement among consumers evaluation of the samples. The lowest agreement was found in Sample 6, with a residual value of 1.61 and the highest in sample 4 (0.98).

By examining the average sample space obtained from the GPA (Fig. 2) dimension 1 grouped samples 2, 3, 4, 6 and 7 and separated samples 5 and 8 on one hand and sample 1 on the other hand. Dimension 2 differentiated samples 1, 3, 4 and 5 from sample 6. Samples 2, 7 and 8 formed another group in this dimension. In dimension 3 (not shown) two groups of samples were found, the first included samples 1, 6, 7 and 8 and the second included samples 2, 3 and 5. Sample 4 was located further apart.

Interpretation of the dimensions of the average space is aided by table 1, where descriptors having correlations greater than 0.80 are shown. Dimension 1 accounted for 27.23% of the variance and separated the samples largely by yellow colour intensity and by consistency. Dimension 2 (15.88%) was mainly related with visual attributes of texture, with creaminess and with different flavour notes. The third axis (11.34%) was characterized by structural texture attributes, with yellow-orange colour and with citric and artificial flavours.

Sample 6 was found to have a liquid aspect, an egg yolk colour and presented typical 'natillas' and milky flavours. Samples 2, 7 and 8 were perceived as more consistent, creamy and thick visually. Sample 1, a home-made style custard was characterized as soft yellow, liquid, creamy and milky, and samples 5 and 8 were more consistent and denser, with a strong yellow colour, and caramel and 'natillas' flavour. Sample 4 stood out as texturally earthy and lumpy, orange-coloured and citric flavoured, with some notes of artificial-powdery flavours. Finally, sample 3 could not be characterized by any descriptor in particular, which is supported by the low variance explained.

To determine whether the consumer panel responses as an homogeneous group or if groupings have occurred consumers where clustered on the basis of their position on dimension 1 of assessor's plot. This plot showed two clusters, one formed by consumers situated at the negative part of the first axis (cluster A) and the other constituted by consumers lying on the positive part (cluster B) (Fig. 3). When analyzing the characteristics of the consumers included in each cluster, it was found that cluster A was mainly formed by women (73%), whereas most of the men (67%) were included in cluster B. Assessors data were separated by cluster membership and the corresponding GPA analysis was repeated. When comparing sample spaces derived from both clusters (Fig. 4), it seems that cluster A consumers discriminated among samples much more than B members did, specially among samples 2, 3, 4 and 7. For cluster A, it is important to remark that dimension 1 accounted for differences in yellow colour intensity above all. Texture was also related with it, but in a minor extent and flavour descriptors were correlated with dimension 2. Attributes of texture clearly dominated the first dimension in cluster B common space whereas yellow colour tonality (rather than colour intensity) was moved to the second dimension. This group was also able to separate samples in terms of creaminess, this attribute being related with the positive direction of the first axis and the negative one of the second axis.

CONCLUSIONS

Free Choice Profile in conjunction with Repertory Grid Method was a valuable tool to determine consumers perceptible differences between commercial ‘natillas’ samples in terms of appearance, flavour and texture. GPA showed that Spanish consumers differentiated samples mainly by colour, visual and oral texture.

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REFERENCES