# SENSORY PROFILE AND CONSUMER TEST OF LEMON WAFER

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## INTRODUCTION

Brazil is the second largest biscuits producer in the world, accounting for about 50% of total consuption in Latin America. Sensory analysis is recognized as an important tool for determining the fiasibility or acceptability of a food product. The succes of the food on the market depends on its performance with the consumer. The determination of the acceptance and/or preference of the product becomes indispensable. The aim of this study was to determine the sensory profile, using the methodology of quantitative descriptive analysis (QDA), and acceptance with consumers of six brands of lemon wafer.

## MATERIAL AND METHODS



### Material

- 6 different brands of lemon wafer purchased from markets in Campinas/SP – Brazil.

### Quantitative descriptive analysis (QDA)

- 12 trained panelistis
- 17 sensory attributes covering appearance, flavor, taste and texture.

### Acceptance test

- 123 lemon wafer consumers
- unstructured 90-mm line scale

➢ sensory data were analyzed by ANOVA, Tukey test ($p<0.05$), and Principal component analysis (PCA), using Statistical Analysis System – SAS (2008).

## RESULTS AND DISCUSSION

- significant difference between samples ($p<0.05$) for all sensory attributes (Table 1).
- samples A and E were considered the most crispies, with no differences between them (Table 2)
- sample B presented the highest values of thickness and overall lemon peel flavor.

**Table 1**. Sensory profile of lemon wafer in relation to each attribute.

| ATTRIBUTE | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| **APPEARANCE** | | | | | | |
| Plate color (CPL) | 7,05$^{a}$ | 1,83$^{b}$ | 7,9$^{c}$ | 4,6$^{d}$ | 5,16$^{e}$ | 2,93$^{f}$ |
| Filling color (CRE) | 1,77 $^{c}$ | 1,55 $^{c}$ | 7,66 $^{a}$ | 0,81 $^{d}$ | 4,92 $^{b}$ | 4,80 $^{b}$ |
| Thickness (EGB) | 4,15 $^{c,d}$ | 7,75 $^{a}$ | 3,96 $^{d}$ | 4,60 $^{c,b}$ | 5,07 $^{b}$ | 3,46 $^{e}$ |
| Apparent crispness (CRA) | 6,93 $^{a}$ | 2,07 $^{d}$ | 6,59 $^{a}$ | 3,64 $^{c}$ | 4,84 $^{b}$ | 3,27 $^{c}$ |
| **FLAVOR** | 4,99 $^{c}$ | 2,09 $^{d}$ | 2,64 $^{d}$ | 6,23 $^{a,b}$ | 6,73 $^{a}$ | 5,86 $^{b}$ |
| Lemon artificial (AAL) | | | | | | |
| Flour (AFA) | 2,36 $^{a}$ | 1,76 $^{b}$ | 0,94 $^{c}$ | 2,21 $^{a,b}$ | 1,89 $^{b}$ | 1,96 $^{a,b}$ |
| Sweetish (AAD) | 3,07 $^{c}$ | 2,05 $^{e}$ | 1,65 $^{e}$ | 2,57 $^{d}$ | 3,48 $^{b}$ | 3,95 $^{a}$ |
| Lemon peel (ACL) | 2,33 $^{c}$ | 6,26 $^{a}$ | 1,13 $^{d}$ | 2,30 $^{c}$ | 2,92 $^{b}$ | 2,04 $^{c}$ |
| **TASTE** | | | | | | |
| Sweet (SGD) | 6,69 $^{a}$ | 4,25 $^{c}$ | 2,60 $^{d}$ | 5,91 $^{b}$ | 5,99 $^{b}$ | 5,59 $^{b}$ |
| Acid (SGA) | 1,73 $^{b}$ | 1,96 $^{b}$ | 7,00 $^{a}$ | 2,03 $^{b}$ | 2,04 $^{b}$ | 1,76 $^{b}$ |
| Roast (STO) | 6,11 $^{b}$ | 1,58 $^{d}$ | 7,78 $^{a}$ | 1,49 $^{d}$ | 2,93 $^{c}$ | 2,60 $^{c}$ |
| Lemon artificial (SAL) | 5,14 $^{b}$ | 3,12 $^{c}$ | 2,23 $^{d}$ | 3,50 $^{c}$ | 4,69 $^{b}$ | 6,15 $^{a}$ |
| **TEXTURE** | | | | | | |
| Chewiness (TMA) | 5,97 $^{b}$ | 4,09 $^{d}$ | 5,00 $^{c}$ | 3,40 $^{e}$ | 7,03 $^{a}$ | 6,35 $^{b}$ |
| Crispness (TCR) | 5,16 $^{c}$ | 2,39 $^{d}$ | 5,51 $^{c}$ | 2,15 $^{d}$ | 6,08 $^{b}$ | 6,78 $^{a}$ |
| Hardness (TDU) | 3,09 $^{c}$ | 1,59 $^{e}$ | 3,40 $^{c}$ | 2,19 $^{d}$ | 4,93 $^{b}$ | 7,74 $^{a}$ |
| Greasy texture (TGR) | 4,06 $^{d,e}$ | 3,73 $^{e}$ | 4,61 $^{c,d}$ | 4,78 $^{c}$ | 7,70 $^{a}$ | 5,78 $^{b}$ |
| Sandiness (TAR) | 1,53 $^{d}$ | 5,12 $^{b}$ | 1,29 $^{d}$ | 3,88 $^{c}$ | 1,40 $^{d}$ | 6,70 $^{a}$ |

Averages with the same letters do not differ significantly ($p<0.05$) in the same line, by Tukey test.

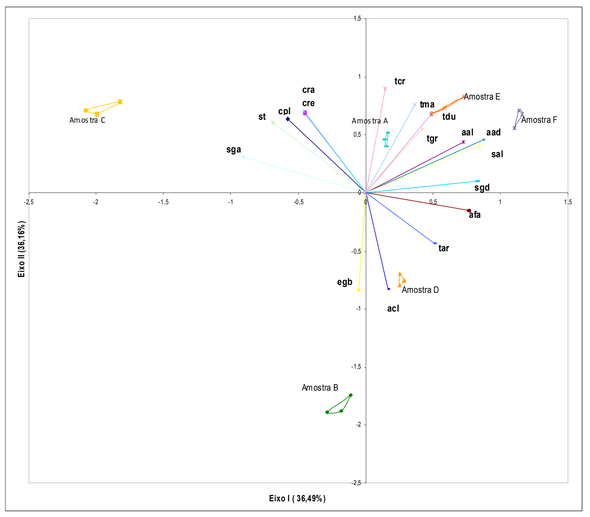


**Figure 2**. Two-dimensional projection of PCA of descriptive terms for the six wafer lemon samples.

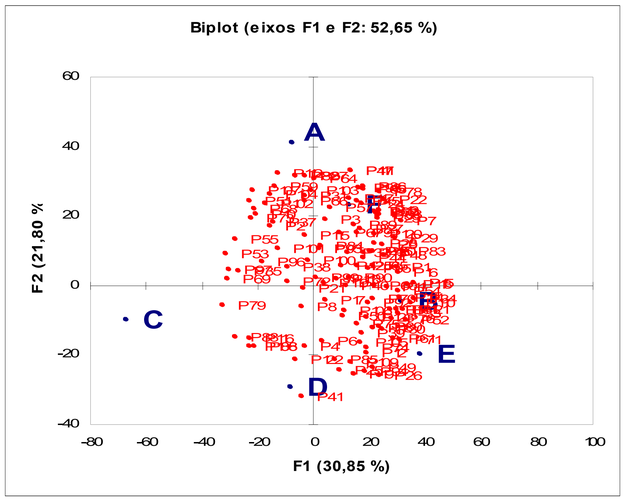


**Figure 3**. Preference mapping of lemon wafer samples.

**Table 2**. Average results (n=123) of sensory acceptability evaluation of lemon wafer samples.

| | Samples | | | | | |
|---|---|---|---|---|---|---|
| **Attributes** | **A** | **B** | **C** | **D** | **E** | **F** |
| Appearance | 6,1$^{b,c}$ | 6,9$^{a}$ | 5,4$^{c}$ | 6,5$^{a,b}$ | 6,3$^{a,b}$ | 6,2$^{a,b}$ |
| Lemon taste | 5,0$^{a,b}$ | 5,1$^{a,b}$ | 3,9$^{c}$ | 4,8$^{b}$ | 5,5$^{a,b}$ | 5,7$^{a}$ |
| Crispness | 6,5$^{a}$ | 5,3$^{b,c,d}$ | 4,6$^{d}$ | 4,9$^{c,d}$ | 6,2$^{a,b}$ | 5,5$^{b,c}$ |
| Overall impression | 5,7$^{a}$ | 5,5$^{a}$ | 4,2$^{b}$ | 5,0$^{a}$ | 5,6$^{a}$ | 5,7$^{a}$ |

Averages with the same letters do not differ significantly ($p<0.05$) in the same line, by Tukey test.,

## CONCLUSION

- samples showed good acceptance in relation to appearance, flavor, lemon flavor, and crispness.
- According to Preference mapping, sample F was considered the favorite followed by sample B.