



disproquima

LIFE SCIENCE PRODUCTS

nutrasal®

**NutraSal 50% Less
Sodium Sensory
Analysis - Toasts**

Nutramax a Disproquima company

Contenido

| | |
|---|---|
| 1. SENSORY ANALYSIS | 2 |
| 2. METHODOLOGY | 2 |
| 3. EVALUATORS / SENSORY PANELISTS | 2 |
| 4. TEST PROTOCOL | 5 |
| 5. STATISTICAL ANALYSIS | 5 |
| 6. RESULTS | 5 |

1. SENSORY ANALYSIS

To prove the sensory quality of NutraSal[®] 50% Less Sodium, a sensory test was carried out with toasts formulated with common salt (standard) and toasts with partial reduction (50% less sodium) of the salt.

In toasts with 50% less sodium, NutraSal[®] 50% Less Sodium completely replaced common salt in a 1: 1 weight / weight ratio in the formulation. This was the only change in relation to the standard formulation (with salt), the other ingredients did not undergo any change in composition.

The samples were coded with three-digit numbers, randomly chosen, to be presented to the evaluators in the sensory test.

2. METHODOLOGY

Global acceptability and flavor (intensity of salty taste, perception of bitter taste, umami taste, metallic taste and residual taste) were evaluated through an affective test with consumers using the 9-point structured hedonic scale to assess acceptability (global and flavor), the five-point (just-about-right) ideal scale to assess salty taste intensity and intensity scales (0 = none; 10 = strong) to assess bitter and umami tastes and metallic and residual flavors.

All scales used are widely accepted and used in sensory studies with consumers.

3. EVALUATORS / SENSORY PANELISTS

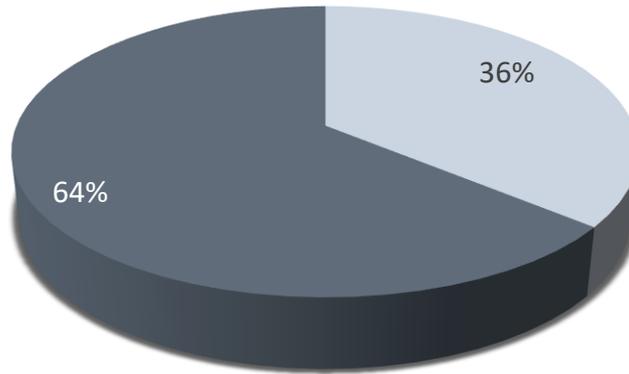
One hundred and five (105) individuals of both sexes, aged over 18 years, consumers of toast, participated in the test. The profile of the evaluators is shown in the figures.



disproquima

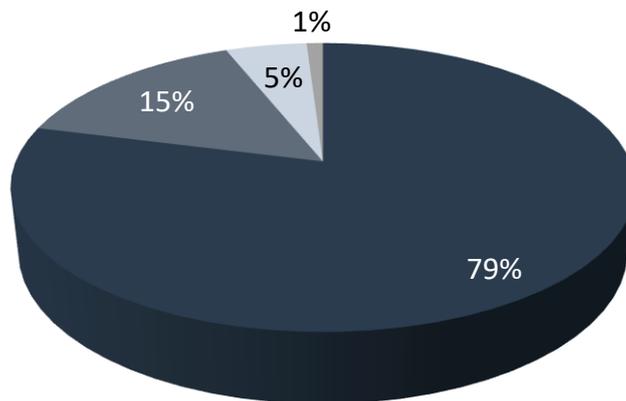
LIFE SCIENCE PRODUCTS

Gender (%)



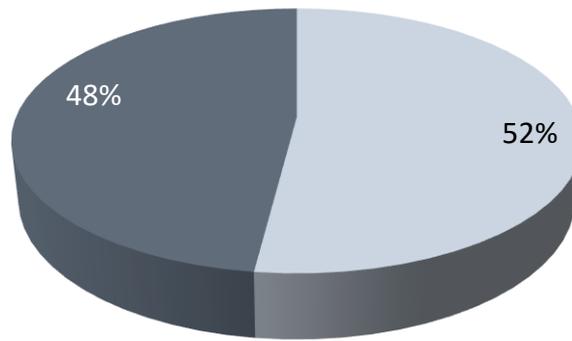
■ Male ■ Female

Age (%)



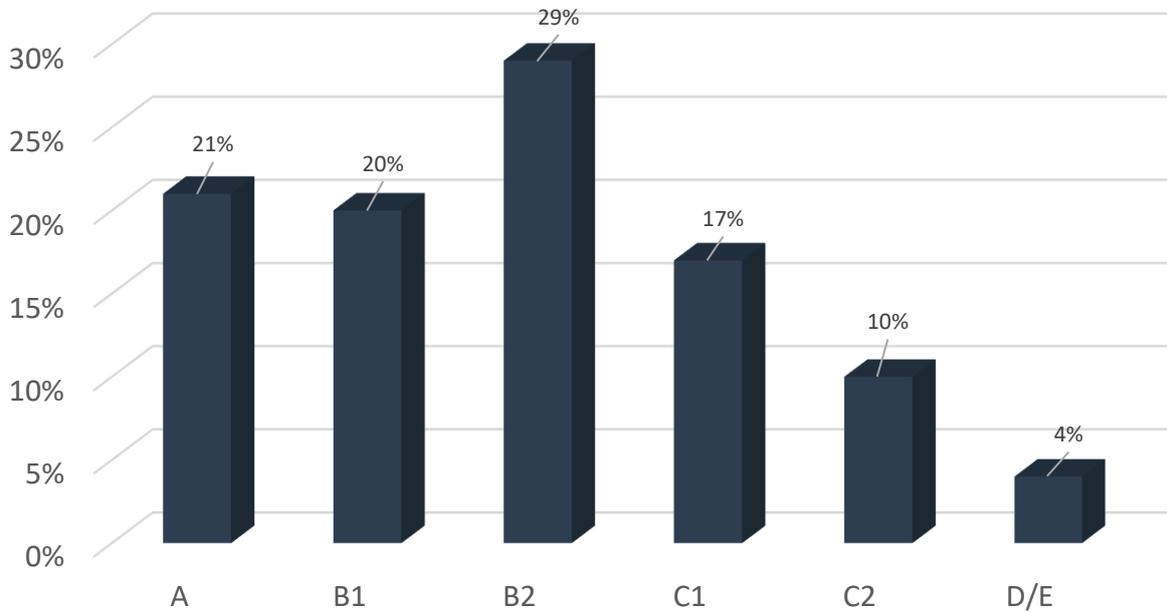
■ 18-25 ■ 26-35 ■ 36-50 ■ >50

Are you looking to consume products with reduces sodium content (%)



■ yes ■ no

Socioeconomic profile



4. TEST PROTOCOL

The test was carried out at the Food Services Laboratory of the Food Engineering College of Unicamp (University of Campinas, Brazil). The analysis took place in individual cabins, under white light and a climate-controlled environment (23°C, RH approx. 60%).

5. STATISTICAL ANALYSIS

The data were subjected to analysis of variance (sources of variation: samples and sensory panelists) at the level of 5% significance, and Tukey's means comparison test. The SAS statistical software (The SAS Institute, Carry, USA) was used in the calculations.

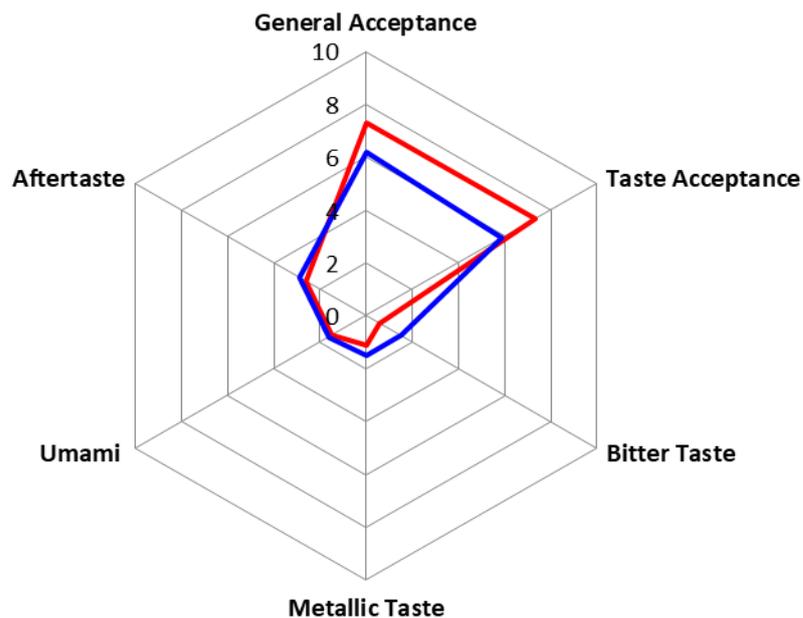
6. RESULTS

As shown in the graphic, the sensory profile of NutraSal® 50% Less Sodium is very similar to that of common salt.

The statistical analysis of the opinion of 105 sensory panelists showed that there is no significant difference between the toast prepared with common salt and the toast with 50% less sodium (prepared with NutraSal®), with regard to global acceptance, general flavor, bitter taste, metallic taste, umami and residual taste.

Therefore, it is proven that NutraSal® is an excellent technological tool for the manufacture of foods with sodium reduction without detriment to the taste and satisfaction of the final consumer.

Sensory Analysis - Toasts with Common Salt or with NutraSal® 50% Less Sodium



— Common Salt (sodium chloride) — NutraSal® 50% Less Sodium