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Sensory descriptive analysis of Argentinian spelt sourdough bread

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Abstract:

Sourdough bread has carved out a substantial niche, with consumers willing to pay more, for a product made with organic wholemeal flour, which provides carbohydrates, proteins, fiber, and bioactive compounds in their diet.

Wholemeal spelt flour is a valuable ingredient that enhances the nutritional and sensory profiles of bakery products. Dinkel EcoFauno (DK) and Oberkulmer Rotkorn (OR) are two types of ancient wholemeal spelt flours that are organically certified in Argentina.

This study aimed to generate descriptive profiles of sourdough bread made with wholemeal spelt flours, using wholemeal wheat for comparison.

First, individuals were recruited, selected, and trained to form a trained panel of 6 members who finally participated in obtaining sensory profiles. The different aromatic compounds were previously studied in spelt flours to evaluate olfactory recognition by evaluators.

The three sourdough bread formulations were evaluated with a Quantitative Descriptive Analysis (QDA)® in three sessions, following a fully randomized block design. The bread slices, one cm thick, were enclosed individually in an aluminum wrap and heated to 40°C for easy identification of volatile compounds.

The descriptive profile data were analyzed through a two-way analysis of variance (with sample as fixed effect sample and panelist as random effect) using SenPAQ version 6.3 software.

The DK showed a greater intensity of global odour ($p<0.05$) with the highest intensity of 'ferment' odour ($p<0.05$), and licorice and nuts as prominent descriptors. Regarding global flavour attribute, no differences were found compared to the control, although DK was perceived with greater intensity, possibly because of the "nuts" and "ferment" descriptors where it differed from the other breads.

OR samples showed less intense global odour and flavor than DK ($p<0.05$), without differing from the control ($p>0.05$).

The control sample had a higher intensity of honey odour than DK and OR ($p<0.05$) and higher intensity at baking attribute than DK ($p<0.05$).

Our findings emphasize the unique characteristics of spelt flour sourdough bread, enabling targeted marketing for this specific market niche.

***Keywords**:* Sensory analysis, Spelt, flour, Sourdough bread