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BOOK OF ABSTRACTS

6TH MEETING
OF YOUNG RESEARCHERS OF UNIVERSITY OF PORTO



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Influence of the addition of β -glucans in the volatiles profile in homemade bread

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The quality of bread is normally defined according to its volume, texture, color, and flavor. However, the characteristic aroma of bread is undoubtedly one of the most important parameters influencing its acceptance by consumers. The volatile and nonvolatile compounds that contribute to the flavor of bread include acids, alcohols, aldehydes, esters, ethers, ketones, furans, hydrocarbons, lactones, pyrazines, pyrroles, and sulfur compounds [1].

There is currently a growing search on the incorporation of new ingredients in bread with the aim of improving its flavor, nutritional quality and health properties. β -glucans improve cardiovascular health through a decrease the cholesterol of lipoproteins of low density (cLDL) and glycemic response. Also, they may have a powerful immunomodulating effect and show anti-inflammatory and antitumor effects and promote a greater stimulation of the immune system against infections [2]. The objective of this work was to evaluate the impact of the incorporation of β -glucans from cell wall in the volatile profile of bread.

Breads supplemented with β -glucans (0,5; 1; 1,5 and 2 g/500g flour) were analyzed and compared with bread without supplementation. In all cases, the assessment was performed in triplicate. For the Headspace analysis by Solid Phase Micro Extraction (HS-SPME), 2 g of bread, crumb and crust, was crushed and weighed into a 50-mL vial. Then, 10 mL of a 20% NaCl solution (pH = 3 with 0.05M citric acid) were added to the vial and the vial immediately sealed at once and kept at -4 °C during 10 min. Afterwards, the vial was placed into an ultrasonic cleaner during 15 min. To extract volatile compounds were used a CAR-PDMS SPME fibre (75 μ m thickness, Supelco Co., Bellefonte, PA, USA) inserted into the sample vial through the septum and exposed to the HS for 60 min at 50 °C under constant agitation (600 rpm). Thereafter, the SPME fibre was inserted in GC-MS in the split-less mode.

The analysis of volatiles in the bread shows that predominant groups of compounds, expressed as relative percentage of area, are alcohols and aldehydes. The most important compounds in each category correspond to ethanol, hexanol, isoamylalcohol and butanal, 3-methyl-butanol, 2-methyl-butanol; hexanal and heptanal. Although, the β -glucans addition does not generate a significant change in the total area of volatile compounds found in different bread samples ($p > 0,05$). However, β -glucans addition reduced significantly ($p < 0,05$) the number of volatile compounds identified.

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