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Influence of β-glucans addition on texture and color of homemade bread

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β-glucans are soluble and fermentable fibers that, once in the intestine can compose highly viscous solutions, presenting benefits for insulin resistance, dyslipidemia, hypertension, and obesity [1]. Thus, β-glucans can be useful in the food industry, increasing the fiber content of food products and enhancing their health properties. According to EFSA, the amount of yeast β-glucans in conventional foods must range between 50 and 200 mg per serving [2]. However, the influence of β-glucans addition on bread sensory characteristics was not understood.

Bread texture and color affect consumer preference. Sensory evaluation is not simple, nor objective. Thus, instrumental measurement is crucial. The objective of this work was to study the effect of adding different levels of β-glucans extracted from yeast cell wall to improve the bread’s characteristics.

Breads were made from 500g of flour mixture of NACIONAL - CEREALIS appropriate for homemade bread “pão caseiro” 320 ml water and variable amounts of β-glucans (0, 1.5, 1, 1.5 and 2%). Weight and volume were evaluated. The characteristics of texture and color were measured. A Texture Analyser was used for evaluation of Hardness, Cohesiveness, Elasticity, Adhesiveness and Masticability. Colour, lightness (L*), redness (a*) and yellowness (b*) were determined using a Minolta colorimeter. The bread displaying the largest volume was that with a dose of 1.5g and the one with the smallest volume was that with a dose of 0g of β-glucan extract. For Hardness, the highest value corresponded to the 0g dose and the lowest was the 1.5g one; whereas for Elasticity, the highest was for 1.5g and the lowest for 0g and 0.5g; the highest value for Masticability corresponded to 0.5g and the lowest one to 1.5g. In respect to color, the L* parameter was the highest for the 1.5g dose and the lowest for the 1g one; the a* parameter was the highest for 0g and the lowest for 1.5g; the b* parameter was the highest for 0g and the lowest for 1.5g. More studies are needed to confirm the influence of β-glucans addition to homemade bread using different baking conditions.

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Reducing salt in bread using natural flavour enhancers: consumer's acceptability and saltiness perception

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Cardiovascular diseases (CVD) are the leading cause of death worldwide. Hypertension is considered as the greatest modifiable risk factor for CVD, and excessive intake of salt is its main cause. Processed foods are responsible for 75% of total salt intake, especially among consumers as being the group with the highest individual contribution. Thus, reduction of salt content in bread may substantially reduce these risks to a population level; several strategies have been developed with this purpose. In this work, we intend to verify whether the introduction of natural flavour enhancers may be a means to significantly reduce the salt content of white wheat pan bread, without significantly affecting its final quality and acceptance by the consumer. Following an exploratory study with seven flavour enhancers and three different levels of added salt [1] the formulations using olive oil, lemon juice, thyme infusion and garlic powder as natural flavour enhancers were selected and reproduced considering medium and low levels of added salt (8 and 4 g / kg flour) and a control, with medium level of added salt was also considered, totalling 9 formulations. These were evaluated by an untrained panel of consumers (n = 50) for the overall acceptability using a 5-points hedonic scale [2] and perceived saltiness with a 5-point JAR scale, aiming for a penalty analysis [3]. It was found that samples with olive oil, garlic powder and lemon juice had an overall acceptance equal or superior than the control, even with half the amount of salt, and that the perceived lack of saltiness, observed in the control loaf, was slightly improved by the addition of flavour enhancers with reduced salt content and significantly improved when the salt content was the same as the control. Available sodium in these 9 loaf formulations was quantified by atomic absorption spectrometry [4]. Results show that the final NaCl content of bread, as determined analytically, was similar to the calculated level considering the amount of added salt and final bread weight, 5.3 versus 5.5 g NaCl/kg bread (medium salt added) and 2.6 versus 2.7 g NaCl/kg bread (low salt added); respectively. It was concluded that the Flavour enhancers do not act by adding sodium. The results of this study indicate that the use of lemon juice or olive oil may be a relevant strategy to reduce the salt content in bread loaves, without significantly affecting consumer acceptability.

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