ABSTRACT

Rheological Properties of Wheat-Maize Dough and Their Relationship with the Quality of Bread Treated with Ascorbic Acid and Malzperle Classic® Bread Improver

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The aim of this work was to investigate the effect of ascorbic acid and a commercial bread improver on the physical quality of wheat-maize bread, and establish correlations between the physical properties of the bread and rheological properties of the dough. Wheat flour was substituted with 10, 20 or 30% maize flour and the farinograph and extensograph properties of the dough were evaluated. Farinograph water absorption, dough development time, dough stability and farinograph quality number decreased whereas the degree of softening increased with increasing substitution of wheat flour with maize flour. Extensograph dough energy, resistance to extension, extensibility and maximum resistance decreased with increasing substitution of wheat flour with maize flour. Ascorbic acid and commercial bread improver improved bread specific volume and form ratio; decreased crumb firmness, resilience and chewiness; and increased crumb springiness and cohesiveness. Farinograph water absorption and degree of softening; and extensograph energy, extensibility, maximum resistance and ratio number showed the highest number of significant correlations ($P \leq 0.01$ or $P \leq 0.05$) with the physical properties of wheat-maize bread.

Key words: Bread, maize, wheat, rheology, texture profile analysis.