

390. Comparison of different preservation methods on the microbiological, texture and color properties of industrial bread during storage time

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Consumption of bread made from preserved dough is increasing in bakeries, supermarkets and restaurants all around the world, because of the ease of producing freshly baked product, at any time of the day. Using preserved dough has advantages such as saving time, space, equipment and retailing expenses.

The aim of this work was to study the behaviour of wheat bread dough during storage time under different preservation methods. Industrial wheat bread dough was packed into polyethylene bags (40g portions) and storage with partial vacuum (50%), modified atmosphere (MAP) (50%CO₂/50%N₂) and freezing (-35°C). Samples were storage at 4°C and -18°C, during 15 and 60 days, for vacuum and MAP, and freezing, respectively. A control with air was also made to simulate industrial production.

Dough and bread (dough was cooked in the oven at 200°C during 11min) texture, color, moisture content, water activity and pH were determined. Samples were analysed over shelf life (0,1,2,4,8,15,30,60 days). The analysis of variance (ANOVA) and the Tukey test were used to determine statistically different values at a significant level of (p<0.05).

Through the results obtained in the microbiological analysis it was concluded that dough and bread are according with the quality and food safety parameters required by Regulation (EC) No. 1441/2007 and the guidelines defined by the Health Protection Agency (HPA), presenting satisfactory quality in relation to the parameters analysed. Texture results showed that hardness of bread crumb and crust increased over storage time for air (control), vacuum and MAP conditions.

On the contrary, hardness of samples, under freezing storage, remained constant until the end of time. The same behaviour was found for pH results. There were no significant differences in water activity and moisture content during storage time, regardless of the preservation method. Concerning color results, luminosity of dough and bread crumb decreased during storage time for all the conditions studied.

It was concluded that wheat dough bread storage under freezing conditions could be a viable solution for the industry in order to extend shelf-life, while assuring consumers a quality product at any time of the day, enabling greater efficiency to the bakeries.