



AP-17: Effect of Vacuum Storage on the Shelf Life and Microbiological Quality of Gluten-Free Baguette

HACHEMI Nour el houda^{1*}, BOULEMKAHEL Souad¹, MEGHZILI Batoul¹,
KERBOUCHE Chouaïb², ZIDOUNE M.N³., BENATALLAH Leila¹

1 *Agro-Food Engineering Laboratory (GENIAAL), Institute of Nutrition, Food, and Agro-Alimentary Technology (INATAA),*

2, *Laboratory of Biomathematics, Biophysics, Biochemistry and Scientometry (L3BS), Faculty of Nature and Life Science, Béjaïa University* 3, *Laboratory of Nutrition and Food Technology (LNTA) Institute of Nutrition, Food, and Agro-Alimentary Technology (INATAA)*

Email*: nourelhouda.hachemi@doc.umc.edu.dz

Subject description: Gluten Free Breads are characterized by a shorter shelf life than wheat bread so maintaining the freshness and extending the shelf life of gluten-free bread is a crucial topic. Fungal development, staling, and moisture loss reduce the shelf life of baked goods.

Objectives: In order to reduce staling and increase shelf life, vacuum storage was performed on GFB baguette in this study.

Methods: To evaluate the quality of breads, technological (water, loss during baking, specific volume, color, texture) and microbiological analysis were performed. The GFB was stored for 21 days (analysis at 7, 14, and 21 days).

Results and discussion: During storage, GFB retains significantly more water than bread without storage. This shows that the storage of the bread under vacuum preserves its water content, which may affect the microbiological stability. For specific volume, results show that there is a stability between the 7th day and 21st day of storage. The appearance of GFB was more red and yellow, with a significant increase in the color comparing with bread vacuum storage. In terms of texture, the number of alveoli significantly lower ($p < 0.05$) for the GFB under vacuum, with rounder and circular alveoli. No significant difference in crust thickness was observed. Microbiological analysis confirmed the good stability and quality of GFB. Yeast and mold contamination appeared after the 15th day of vacuum storage so vacuum storage helped to prevent the growth of bacteria and mold, which can also contribute to staleness.

Conclusion: The results showed that vacuum packaging reduced moisture loss and slowed down the aging process. The results also indicated that the bread had a softer and more pleasant texture due to the lower moisture loss.

Keywords: under vacuum; staling; microbiological quality; texture; color