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## The impact of sodium chloride concentration on the technological and textural properties of bread

*Impactul concentrației clorurii de sodiu asupra proprietăților tehnologice și texturale a pâinii*

The aim of this research was to evaluate the influence of various concentrations of sodium chloride (NaCl) on bread quality by analyzing the changes occurring in physical and textural properties, as well as in the technological behavior of the dough and the final product. Five bread samples were obtained, differentiated by their NaCl content: 0%, 0.4%, 0.8%, 1.2%, and 1.6%. Each sample was evaluated in terms of: specific volume, crumb porosity, technological losses during baking and cooling, and textural properties. Increasing the NaCl concentration led to noticeable changes in bread properties: specific volume and porosity decreased as the salt level increased, due to the inhibition of yeast activity and reduced gluten extensibility. The salt-free control sample exhibited the highest porosity (72.53%), while the salted samples ranged between 67.76% and 72.12%; technological losses decreased during both baking (from 14.94% to 14.15%) and cooling (from 3.86% to 2.58%). This trend is associated with improved water retention and strengthening of the gluten network in the presence of salt; textural properties were significantly affected: at low NaCl concentrations, hardness decreased, whereas at higher levels (1.2–1.6%), both hardness and chewiness increased considerably, indicating the formation of a denser and more rigid internal structure. Elasticity remained constant (~1.00), while cohesiveness showed a slight decrease, from 0.696 in the control sample to 0.651 in the 1.6% NaCl sample. Salt exerts a substantial influence on the physical, technological, and textural properties of bread. High NaCl concentrations (>1.0–1.2%) inhibit fermentation, reduce bread porosity and volume, and lead to the formation of a denser and more rigid crumb. In contrast, moderate salt additions contribute to maintaining an optimal balance between firmness, porosity, and overall structural quality.

*** Acknowledgements:** The research was supported by a grant from the Ministry of Education and Research, CCDI-UEFISCDI, project number PN-IV-PCB-RO-MD-2024-0135, within PNCDI IV and NARD, 25.80013.5107.22ROMD.