

**DEVELOPMENT OF PROCESS CONDITIONS FOR BREAD PRODUCTION  
TECHNOLOGY AND PARAMETERS FOR PACKAGING IN MODIFIED  
ATMOSPHERE (MAP)**

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## Abstract

The problem of microbiological spoilage appearing on bakery products manufactured by Dakri Sp z o. o. prompted the manufacturer to cooperate with the Lodz University of Technology within implementation doctorate project. The aim of the investigation was to search for new technological solutions that would allow the production of bakery products packaged in a modified atmosphere (MAP) with a long shelf life, while meeting the expectations of customers reluctant to use chemical preservatives.

The microbiological quality of the production environment was assessed and a disinfection process was carried out as a remedial action. The influence of gases composition in MAP and the use of ethanol during packaging was checked. Microorganisms causing products spoilage were subjected to microbiological analysis. These microorganisms were identified as moulds and yeasts. The susceptibility of isolates to additives with potential antimicrobial activity was tested. The effectiveness of the use of sourdough and onion extract on the shelf life of the products was checked.

The best results were achieved by application of sourdough obtained with selected starter cultures in the dough recipe and using a gas mixture for packaging in a proportion of 70% carbon dioxide and 30% nitrogen. These conditions ensured the expected shelf life of bakery products while maintaining product quality.