

Research on Reducing Food Losses by Extending the Date of Minimum Durability on the Example of Cereal Products

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Abstract : Microbiological quality and food safety are important food characteristics. Regulation (EU) No 1169/2011 of the European Parliament and of the Council on the provision of food information to consumers introduces the obligation to provide information on the 'use-by' date or the date of minimum durability (DMD). The second term is the date until which the properly stored or transported foodstuff retains its physical, chemical, microbiological and organoleptic properties. The date should be preceded by 'best before'. It is used for durable products, e.g., pasta. In relation to reducing food losses, the question may be asked whether products with the date of minimum durability currently declared retain quality and safety beyond this. The aim of the study was to assess the sensory quality and microbiological safety of selected cereal products, i.e., pasta and millet after DMD. The scope of the study was to determine the markers of microbiological quality, i.e., the total viable count (TVC), the number of bacteria from the Enterobacteriaceae family and the number of yeast and mold (TYMC) on the last day of DMD and after 1 and 3 months of storage. In addition, the presence of Salmonella and Listeria monocytogenes was examined on the last day of DMD. The sensory quality of products was assessed by quantitative descriptive analysis (QDA), the intensity of 14 differentiators and overall quality were defined and determined. In the tested samples of millet and pasta, no pathogenic bacteria Salmonella and Listeria monocytogenes were found. The value of the distinguishing features of selected quality and microbiological safety indicators on the last DMD day was in the range of about 3-1 log cfu/g. This demonstrates the good microbiological quality of the tested food. Comparing the products, a higher number of microorganisms was found in the samples of millet. After 3 months of storage, TVC decreased in millet, while in pasta, it was found to increase in value. In both products, the number of bacteria from the Enterobacteriaceae family decreased. In contrast, the number of TYMCs increased in samples of millet, and in pasta decreased. The intensity of sensory characteristic in the studied period varied. It remained at a similar level or increased. Millet was found to increase the intensity and flavor of 'cooked porridge' 3 months after DMD. Similarly, in the pasta, the smell and taste of 'cooked pasta' was more intense. To sum up, the researched products on the last day of the minimum durability date were characterized by very good microbiological and sensory quality, which was maintained for 3 months after this date. Based on these results, the date of minimum durability of tested products could be extended. The publication was financed on the basis of an agreement with the National Center for Research and Development No. Gospostrateg 1/385753/1/NCBR/2018 for the implementation and financing of the project under the strategic research and development program 'social and economic development of Poland in the conditions of globalizing markets - GOSPOSTRATEG - acronym PROM'.

Keywords : date of minimum durability, food losses, food quality and safety, millet, pasta

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