World Academy of Science, Engineering and Technology
International Journal of Materials and Textile Engineering
Vol:14, No:08, 2020

Antioxidant Activity and Microbiological Quality of Functional Bread Enriched with Morus Alba Leaf Extract during Storage

Authors : Joanna Kobus-Cisowska, Daria Szymanowska, Piotr Szulc, Oskar Szczepaniak, Marcin Dziedzinski, Szymon Byczkiewicz

Abstract : A wide range of food products is offered on the market. However, increasing consumer awareness of the impact of food on health causes a growing interest in enriched products. Cereal products are an important element of the daily diet of man. In the literature, no data was found on the impact of Morus alba preparations on the content of active ingredients and properties of wholemeal bread. Mulberry leaves (Morus alba L) are a rich source of bioactive compounds with multidirectional antioxidant activity, which means that they can be a component of new foods that prevent disease or support therapy and improve the patient's health. The aim of the study was to assess the impact of the addition of white mulberry leaf extract on the antioxidant activity of bread. It has been shown that bread can be a carrier of biologically active substances from mulberry leaves, because the addition of mulberry at a sensory acceptable level and meeting microbiological requirements significantly influenced the increase in the content of bioactive ingredients and the antioxidant activity of bread. The addition of mulberry leaf water extract to bread increased the level of flavonols and phenolic acids, in particular protocatechic, chlorogenic gallic and caffeic acid and isoquercetin and rutine, and also increased the antioxidant potential, which were microbiological stable during 5 days storage. It has been shown also that the addition of Morus alba preparations has a statistically significant effect on anti-radical activity. In addition, there were no differences in activity in DPPH · and ABTS · + tests between post-storage samples. This means that the compounds responsible for the anti-radical activity present in the bread were not inactivated during storage. It was found that the tested bread was characterized by high microbiological purity, which is indicated by the obtained results of analyzes performed for the titers of indicator microorganisms and the absence of pathogens. In the tested products from the moment of production throughout the entire storage period, no undesirable microflora was found, which proves their safety and guarantees microbiological stability during the storage period.

Keywords : antioxidants, bread, extract, quality
Conference Title : ICFPSF 2020 : International Conference on Food Packaging and Safety of Food
Conference Location : New York, United States
Conference Dates : August 10-11, 2020