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Fungal contamination in bread and its control methods

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Background and Aims: Bread is a perishable food, and the reduction of quality and/or freshness of this product is closely related to storage time. From a microbiological point of view, the shelf life of bakery products is mainly caused by filamentous fungi or molds (*Aspergillus* and *Penicillium*). The growth of molds in foods is a significant economic problem, and the number of economic losses associated with the presence of fungi varying from 1% to 5% depending on the season, type of product and production method. In tropical countries, losses related to fungal spoilage in baked goods are about 11%. Another aspect associated with fungal growth in food is the potential production of mycotoxins. A common behavior of consumers towards moldy bread is to remove the moldy part and consume the rest of the product, which is of questionable quality. This is a cause for concern as mold mycelia may have penetrated the bread and released secondary metabolites that may include mycotoxins and molecules with biological activities.

Materials and Methods: The present review was conducted by searching the sources in SID, Scopus, and Google Scholar search databases.



Conclusion: Considering that spoilage of bread brings many health and economic risks. The use of various methods to prevent fungal growth and extend the shelf life of bread can contribute to improving the quality and safety of bakery products.

Results: To prevent premature spoilage of bread and public health concerns, studies have shown that strategies such as using antifungal compounds produced by lactic acid bacteria, monoglycerides, or based fermentation, encapsulated essential oils and their free form, modified packaging, and physical methods such as the use of ozone treatment and the application of novel technologies such as cold plasma, ultraviolet radiation, and nanoparticles (silver, copper) can be effective. In addition, due to the importance of environmental health in the contamination of ready-to-use products, the use of sanitizers with appropriate antifungal properties is necessary.

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