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Effect of fermentation on aflatoxin content of ogi produced from mouldy maize (*Zea mays*) and storage stability of its flour

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Mycotoxins are naturally occurring toxins produced by fungi. They are toxic and among the most carcinogenic substances known, they have severely impacted food safety and quality in various countries in Africa. In this research, the effect of fermentation on aflatoxin content of ogi produced from mouldy maize and storage stability of its flour were investigated. Mouldy and none mouldy maize grains were steeped and subjected to proximate, microbial and aflatoxin content analysis at 0hr, 24hr, 48hr and 72hr fermentation periods. ogi was produced using the traditional method and dried to produce ogi flour. The ogi flours were packed in glass bottles and kept under ambient, refrigerating and freezing temperatures to assess the storage stability of the flours through a period of four (4) weeks. There was a decrease in the protein, crude fiber, ash and carbohydrate contents during the steeping periods. Fat content increased marginally (4.32%-4.36%) for steeped none mouldy maize compared to that of mouldy maize (3.94%-4.01%), though not statistically significant. Microbial analysis indicated a reduction in yeast/mould counts ranging from 7.0–0.50cfu/gx10⁴ in none mouldy maize and 11.45–2.45cfu/gx10⁴ for mouldy maize at 72hr. Higher amounts of Lactic acid bacteria counts were observed at 48hr fermentation period for both samples. During fermentation, aflatoxin contents in the mouldy grains dropped from an initial concentration of 58.00µg/kg in the raw maize sample to 3.13µg/kg on the 72hr steeping period, which is still within the maximum acceptable limit of 10.0µg/kg. Aflatoxin content increased slightly after the ogi was dried and continued as storage progressed. This study has shown that natural fermentation of maize grains for ogi production can substantially reduce the number of aflatoxins contaminating the raw material.

Biography

Aminat Olabisi Adelekan holds a BSc Hons Food Science and Technology in 1992 from University of Agriculture, Abeokuta and MSc Food Science and Technology in 1999 from the same University. She carried out her PhD laboratory work in the Biological Sciences Department of Florida Atlantic University, Davie campus, Florida, USA, on Microbial Diversity studies on African locust beans (*Iru* and *Dawadawa*) using 16S rRNA gene Analysis. Her area of specialization is Food Microbiology/Biotechnology. She is a staff of Bells University of Technology, Ota and rose from Assistant Lecturer in 2005 to Senior Lecturer. She teaches many courses in Food Sciences, Biotechnology, and Nutrition. She is a registered member of the Nigerian Institute of Food Science and Technology (NIFST), Society for Applied Microbiology (SFAM) and American Society of Microbiology (ASM). She has many scientific publications in the area of Food Science and Technology, Food Biotechnology and Nutrition.

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