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Microbial Quality and the Occurrence of Aflatoxins In Plantain/Yam And Wheat Flours In Ado-Odo Ota

S. E. Okafor1 and A. O. Eni1

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Abstract

Flours made from various foods including plantain, yam and wheat are a major part of daily diet for millions of people in Nigerian. If these food crops are not dried rapidly and thoroughly prior to milling, fungal growth and mycotoxin production can occur. Aflatoxins, a type of mycotoxin produced by Aspergillus species have been classified as Group 1 human carcinogens hence should be monitored in routinely consumed foods as the populace maybe potentially exposed to doses of aflatoxins in their daily diet. This study sought to determine the microbial quality and the occurrence of fungi and aflatoxins in plantain, yam and wheat purchased from four markets (Oja-ota, Sango, Atan and Owode markets) in Ado Odo Local Government Area. The mean microbial count for each sample was determined by plating each sample on nutrient agar and fungi was isolated by plating on Potato Dextrose Agar. The total aflatoxin content of the food samples was determined using the Agra Quant® competitive enzyme linked immunosorbent assay (ELISA) kit. The highest mean microbial count (9.30 × 1013 cfu/g) was observed in a plantain flour bought from Sango market while the lowest (1.16 × 1012 cfu/g), was observed in wheat flour from Oja-Ota market. Aspergillus flavus was the predominant (31%) aflatoxigenic fungi isolated compared to A. niger (21%). The other fungi isolated include Rhizopus spp, Geotrichium spp, Yeast, Penicillium spp and Paecilomyces spp. Aflatoxin was detected in all the food samples tested in this study at concentrations ranging from 0.2 ppb to 5.9 ppb which were all within the CODEX Alimentarius Commission (CAC) aflatoxin acceptable limit of 15 ppb.

References

Senior Sample Environment Development Scientist: Diamond Light Source Ltd

Diamond Light Source Ltd

Director of the School: SISSA - Scuola Internazionale Superiore di Studi Avanzati

SISSA - Scuola Internazionale Superiore di Studi Avanzati

Innovation Marketing Assistant: Quantemol Ltd