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ASSESSMENT OF MICRO FLORA, DEOXYNIVALENOL (DON) AND FUMONISIN CONTAMINATION OF GRAINS SOLD IN LOCAL MARKETS, NIGERIA

Oranusi, S., Nwankwo, U. E., Onu-Okpara, I, Olopade, B. K.

ABSTRACT

Fusarium the major deoxynivalenol (DON) and fumonisin producing species of fungi grow as a corn endophyte often without causing disease symptoms in plant. Climate changes resulting in appropriate weather conditions helps in Fusarium growth causing seedling blight, stalk rot and ear rot. Thus most grain contamination of Fusarium comes from the farm. This study was carried out to assess the micro flora and level of DON and fumonisin contamination in Zea mays, Sorghum bicolor, Triticum aestivum and Pennisetum americanum sold in Ota. Forty samples comprising ten of each grain type was analyzed, Fumonisin at concentration ≥ 4.0 mg/kg (ppm) was detected in eight samples of Zea mays and two samples of Triticum aestivum while DON at concentrations ≥ 1.25 mg/kg (ppm) was detected in all the wheat samples using the Rida® Quick Fumonisin and DON test kits. The total aerobic plate count for the samples ranged from 2.0×10^4 to 8.4×10^6 cfu/g, fungal count ranged from 1.0×10^4 to 6.0×10^6 cfu/g while coliform count ranged from < 10 to 2.0×10^3 cfu/g. The predominant microbial isolates from the grains included species of Fusarium, Aspergillus, Mucor, Penicillium, Bacillus, Klebsiella, and Pseudomonas. Infection of grains by fungal species and contamination with mycotoxins can generally be influenced by favourable weather conditions. Measures to address climate changes, effective hazard analysis and critical control point (HACCP) and good storage system are advocated to prevent mould contamination and deleterious mycotoxin production in grains.

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