

ABSTRACT FOR: **BIRYOMUMAISHO JUSTUS MUROKORE (2016/HD13/18959U)**

AFLATOXIN INGESTION ASSESSMENT IN SOUTHWESTERN UGANDA AND AMELIORATIVE EFFECTS OF SELECTED UGANDAN PLANT SPICES ON EXPERIMENTALLY INDUCED AFLATOXICOSIS IN RATS

Over 5.5 billion people worldwide are chronically exposed to aflatoxins, which contribute to 40% of African disease burden. Aflatoxins are produced mainly by *Aspergillus flavus* and *A. parasiticus*. Since prevention of their production is costly, the easiest option is to control their toxicity. Consumption of high phenolic spices is believed to ameliorate the toxicological effects of aflatoxins ingested through food. The current study assessed aflatoxin ingestion in Southwestern Uganda, evaluated Ugandan spice phenolics, flavonoids, antioxidant capacity, and ameliorative effects on induced aflatoxicosis in rats.

Flours of groundnuts, maize, millet, and sorghum, the most commonly aflatoxin contaminated foods, were randomly sampled from Southwestern Uganda, following a consumption frequency questionnaire, and analyzed for aflatoxin content using competitive ELISA. Primary grades and green tea, *C. sinensis*, *Ocimum gratissimum*, *Allium sativum*, *Cymbopogon citratus*, and *Zingiber officinale*, were analyzed for phenolics and flavonoids following Folin-ciocalteu and Aluminium chloride methods respectively. Antioxidant capacity was determined following DPPH and FRAPS methods. Ninety-six male albino rats organized into 16 groups of six and treated for 31 days as follows; 1.Control, 2.Olive oil. 3.AFB₁ Low-dose (100µg/kg), 10.AFB₁ High-dose (300µg/kgAFB₁). 4-9.AFB₁ Low-dose + 2% extracts, 11-16. AFB₁ High-dose + 2% extract. Liver and Kidney functions, Histopathology, and Immune function indicators were measured using standard methods. The highest aflatoxin prevalence, levels and consumption frequency were observed in maize and groundnuts. Processed spices and 40 minutes extraction yielded more TPC. Green tea yielded the highest DPPH (93.82%) and FRAP (39.04µg AAE/mL), and Buganda tea (4,371 µgQE/g) the highest TFC.

Groundnut and maize are the main aflatoxicosis food-route. For maximum TPC, processed spices and longer extraction periods should be preferred. Green and black tea *C. sinensis*, *O. gratissimum*, and *Cymbopogon citratus* are highly ameliorative in aflatoxicity.

Community needs awareness in aflatoxin contamination avenues and effects, and encouragement to regularly consume high phenolic spices.