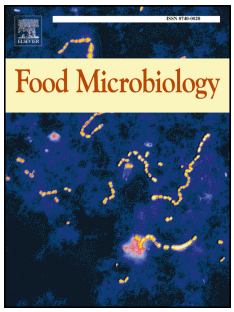
Accepted Manuscript



Morphological and molecular identification of filamentous *Aspergillus flavus* and *A. parasiticus* isolated from compound feeds in South Africa

Henry E. Iheanacho , Patrick B. Njobeh , Francis M. Dutton , Paul A. Steenkamp , Lucia Steenkamp , Julian Q. Mthombeni , Barnabas H. Daru , Anthony H. Makun

PII: S0740-0020(14)00125-7

DOI: 10.1016/j.fm.2014.05.019

Reference: YFMIC 2178

To appear in: *Food Microbiology*

Received Date: 14 November 2013

Revised Date: 28 April 2014

Accepted Date: 25 May 2014

Please cite this article as: Iheanacho, H.E., Njobeh, P.B., Dutton, F.M., Steenkamp, P.A., Steenkamp, L., Mthombeni, J.Q., Daru, B.H., Makun, A.H., Morphological and molecular identification of filamentous *Aspergillus flavus* and *A. parasiticus* isolated from compound feeds in South Africa, *Food Microbiology* (2014), doi: 10.1016/j.fm.2014.05.019.

Morphological and molecular identification of filamentous *Aspergillus flavus* and *A. parasiticus* isolated from compound feeds in South Africa

Henry E. Iheanacho[a*], Patrick B. Njobeh[b], Francis M. Dutton[a], Paul A.Steenkamp.[c, d], Lucia Steenkamp.[c], Julian Q. Mthombeni[a], Barnabas H. Daru[e], Anthony H. Makun[f]

[a]Food, Environment and Health Research Group, Faculty of Health Sciences, University of Johannesburg, South Africa
[b]Department of Biotechnology and Food Technology, University of Johannesburg
[c]Biosciences, CSIR, PO Box 395, Pretoria, 001, South Africa
[d]Department of Biochemistry, University of Johannesburg, South Africa
[e]African Centre for DNA Barcoding, University of Johannesburg, South Africa
[f]Department of Biochemistry, Federal University of Technology, Minna, Nigeria

Corresponding author's e-mail: i_henri@yahoo.com; henryi@uj.ac.za
Tel: +27837311482, +27115593090, +27115596867

ABSTRACT

Isolation of filamentous species of two *Aspergillum* genera from compound feeds produced in South Africa, and subsequent extraction of their individual DNA in this study, presents a simple but rapid molecular procedure for high through-put analysis of the individual morphological forms. DNA was successfully isolated from the *Aspergillus* spp. from agar cultures by use of a commercial kit. Agarose gel electrophoresis fractionation of the fungi DNA, showed distinct bands. The DNA extracted by this procedure appears to be relatively pure with a ratio absorbance at 260 and 280 nm. However, the overall morphological and molecular data indicated that 67.5 and 51.1% of feed samples were found to be contaminated with *A. flavus* and *A. parasiticus,* respectively, with poultry feed having the highest contamination mean level of 5.7×105 CFU/g when compared to cattle (mean: 4.0 × 106 CFU/g), pig (mean: 2.7 x 104 CFU/g) and horse (1.0 x102 CFU) feed. This technique presents a readily achievable, easy to use method in the extraction of filamentous fungal DNA and it's identification. Hence serves as an important tool towards molecular study of these organisms for routine analysis check in monitoring and improving compound feed quality against fungal contamination.

Key words: Compound feed, *Aspergillus* fungi, morphological, molecular, DNA, electrophoresis