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

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Morphological and molecular identification of filamentous 1 Aspergillus flavus and A. parasiticus isolated from compound 2 feeds in South Africa 3 Henry E. Iheanacho^{a*}, Patrick B. Njobeh^b, Francis M. Dutton^a, Paul A. Steenkamp.^{c, d}, 4 Lucia Steenkamp.^c, Julian Q. Mthombeni^a, Barnabas H. Daru^e, Anthony H. Makun^f 5 6 ^aFood, Environment and Health Research Group, Faculty of Health Sciences, 7 University of Johannesburg, South Africa 8 9 ^bDepartment of Biotechnology and Food Technology, University of Johannesburg ^oBiosciences, CSIR, PO Box 395, Pretoria, 001, South Africa 10 ^dDepartment of Biochemistry, University of Johannesburg, South Africa 11 ^eAfrican Centre for DNA Barcoding, University of Johannesburg, South Africa 12 ¹Department of Biochemistry, Federal University of Technology, Minna, Nigeria 13 14 15 Corresponding author's e-mail: i_henri@yahoo.com; henryi@uj.ac.za 16 Tel: +27837311482, +27115593090, +27115596867 17 18 ABSTRACT 19 20 21 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 22 rapid molecular procedure for high through-put analysis of the individual morphological forms. DNA 23 was successfully isolated from the Aspergillus spp. from agar cultures by use of a commercial kit. 24 Agarose gel electrophoresis fractionation of the fungi DNA, showed distinct bands. The DNA 25 extracted by this procedure appears to be relatively pure with a ratio absorbance at 260 and 280 26 27 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 28 29 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: 2.7×104 CFU/g) and horse (1.0×102 CFU) feed. This 30 technique presents a readily achievable, easy to use method in the extraction of filamentous fungal 31 32 DNA and it's identification. Hence serves as an important tool towards molecular study of 33 these organisms for routine analysis check in monitoring and improving compound feed quality 34 against fungal contamination. 35 Key words: Compound feed, Aspergillus fungi, morphological, molecular, DNA, electrophoresis 36 37 38 39 40 41 42 43 44

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