



# Identification and phylogenetic analysis of in vitro banana fungi contaminants based on ITS regions sequence

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## Abstract

Plant tissue culture offer a means for the rapid production of disease-free plants in large quantities, however fungi contamination is a major constraint to its successful application. This study characterized, identified and conducted phylogenetic analysis on fungi contaminants of in vitro cultured banana based on inter-space (ITS) regions sequence. Genomic DNA were extracted from pure culture of fungi contaminants. Polymerase chain reaction amplification and Illumina short sequence were conducted using ITS1 and ITS4 primers. The nucleotide sequences were aligned for consensus and compared with NCBI GenBank using Basic Local Alignment Search Tool (BLAST). Analysis of the sequences using MEGA 7 Software at higher similarity sequence identified five *Aspergillus* spp., three *Penicillium* spp., 1 each of *Fusarium*, *Trichoderma* and *Cladosporium* species as the contaminants. The overall genetic distance between the fungi species was 0.205 and the Maximum Composite Likelihood of nucleotide substitution showed Thyiamine is the most stable. The fungi were clustered in three major groups at 0.10 genetic distance which subdivided into five clusters. A cluster and sub-cluster of five *Aspergillus* strains; a major cluster of three *Penicillium* strains; a cluster comprising of *Fusarium chlamyosporum* and *Trichoderma viride*; and, a sole fungi *Cladosporium tenuissimum*. The *Aspergillus* group were phylogenetically related to *A. flavus* and *A. parrisclerotigenus*, the identified *Penicillium* spp were closely related to *Penicillium citrinum* while the detected *Cladosporium* aligned with *Cladosporium tenuissimum* and *Phoma multirostrata*. The study concludes that molecular identification of the fungi contaminants covers the setbacks of conventional methods and the information provided could be helpful in development of specific and effective sterilization protocol to minimize contamination during in vitro culture procedure.

## Biography:

Iam from Nigeria and my primary education at the Command Children's School, Ikeja, Lagos, Command Secondary School, Ipaja, Lagos and proceeded to the Lagos State university, Ojo in Nigeria. Where he studied Geography and graduated in 1999.

## Speaker Publications:

1. Integrated System for Cashew Disease Management and Yield, DOI: 10.4314/cajeb.vol13i1.6



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