

OPTIMIZATION OF PROTEIN ISOLATION AND PRELIMINARY COMPARATIVE PROTEOMICS OF PATHOGENIC FUSARIUM OXYSPORUM f. sp CUBENSE (P-FOC) AND NON-PATHOGENIC FUSARIUM OXYSPORUM (np-FO)

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JOURNAL OF PLANT PATHOLOGY

Volume: 99

Issue: 2

Pages: 361-369

Published:JUL 2017

Document Type:Article

Abstract

Panama wilt of banana caused by *F. oxysporum* f. sp. cubense (Foc) is a devastating disease of banana and in severe condition causes 100% yield loss. In order to understand the molecular mechanism of pathogenicity for the effective management of the wilt disease, three protocols (MgCl₂/CHAPS, TCA-Acetone and TCA/Phenol-SDS) were evaluated to extract protein from Foc mycelial tissue. Comparatively, TCA/Phenol-SDS method of protein precipitation and extraction resulted in highest protein quantity (0.76 +/- 0.025 mg/g of mycelial tissue) and ca. 600 spots were identified in Coomassie Brilliant Blue (CBB) stained gels. A comparative proteomic study conducted on pathogenic *F. oxysporum* f. sp. cubense (P-Foc) (race 1, VCG 0124) and non-pathogenic *Fusarium oxysporum* (np-Fo) revealed a difference at the proteome level. In the comparative proteomics study, 23 spots were found to be differentially expressed with ≥ 1.5 fold intensity differences between P-Foc and np-Fo. Preliminarily, six spots (five significantly upregulated and one unique protein) from P-Foc were randomly picked and subjected to MALDI-TOF MS analysis. Further, MASCOT search and functional annotation revealed that these upregulated proteins identified in P-Foc may be involved in invasive growth, signal transduction and pathogen persistence during adverse condition.

Keywords

Author Keywords:Fusarium wilt pathogen; 2D gel electrophoresis; MALDI-TOF MS; homogentisate 1,2-dioxygenase

KeyWords Plus:BOTRYTIS-CINEREA; ASPERGILLUS-FUMIGATUS; VACUOLE FUSION; GRAY MOLD; VIRULENCE; BANANA; PLANTS; GROWTH; YEAST; WILT