Use of RAPD-PCR and Phage Display Techniques to Study Variation in *Colletotrichum gloeosporioides* Isolated from Papaya (*Carica papaya* L)

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Abstract

ScFv monoclonal antibodies were raised against *Colletotrichum gloeosporioides* (Penz.) Penz. and Sacc. isolates of papaya using phage display technology. Phages obtained after fourth round of biopanning were used to generate monoclonal antibodies against the pathogen. Four monoclonals were identified having the highest binding affinity to *C. gloeosporioides* and were selected to differentiate isolates of *C. gloeosporioides* along with isolates of *C. capsici*, *Fusarium oxysporum* f.sp. *cubense* and *Alternaria* spp. Cetyle trimethyl ammonium bromide (CTAB) method with some modifications was followed to isolate total genomic DNA in another experiment. Initially, DNA samples were amplified with 20 different OPA random primers and two of them were selected to amplify individual DNA samples from the eight isolates. All monoclones found to have high binding affinity towards different isolates of C. *gloeosporioides* compared to three other species, indicating their specificity towards C. *gloeosporioides*. There was a greater variation observed among isolates according to band patterns. However, with both, primers (OPA 3 and OPA 14), there were common bands that may be specific to C. *gloeosporioide*.

Keywords: *Colletotrichum gloeosporioides*, monoclonal antibody, phage display, RAPD