

Poster

Characterization of '*Candidatus Phytoplasma Asteris*' (16SrI) Associated with Dieback and Yellow Crinkle Diseases of *Carica papaya* in Malaysia

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Abstract

Papaya (*Carica papaya*) is an important and highly nutritious fruit crop grown worldwide. During a survey conducted in the state of Selangor in Peninsular Malaysia, papaya plants showing phytoplasma symptoms were observed. A total of six samples were collected from three symptomatic and three non-symptomatic plants. Total DNA was extracted and the phytoplasma 16SrRNA encoding gene was amplified using nested Polymerase Chain Reaction (PCR) with universal primer pairs P1/P7 followed by R16F2n/ R16R2. PCR products of 1.2 kb were obtained from R16F2n/ R16R2 primer pair from all symptomatic samples. The amplicon was purified, cloned and sequenced. Phylogenetic tree was constructed using 16SrDNA (R16F2n/ R16R2) sequence (1.7 kb). Computer simulated RFLP analysis of the F2n/R2 fragments accomplished with 17 restriction enzymes *iPhyClassifier* was used to identify phytoplasma groups and sub groups. Papaya infected by phytoplasma mainly exhibits three types of symptoms, *i.e.*, die back, yellow crinkle and mosaic. BLAST analysis of 16S rDNA sequences revealed that the detected phytoplasma from papaya displayed 100% sequence identity with *Catharanthus roseus* little leaf phytoplasma (KX894734) represented from India and it belongs to group 16SrI, *Candidatus* phytoplasma asteries. The sequence was deposited in the NCBI GeneBank database (Accession number MT764331). The papaya phytoplasma in Malaysia (MT764331) and *Catharanthus roseus* little leaf phytoplasma were clustered in same clade. Both are in group 16SrI and subgroup B. A detailed comparison of the virtual RFLP pattern of 16S rDNA gene sequence derived from the detected phytoplasma exhibited 100% similarity to the reference pattern of 16Sr group I, subgroup B, means accordingly the phytoplasma from the Malaysian papaya samples is a member of 16SrI-B. *Candidatus* phytoplasma asteries is reported to infect several plant species in Malaysia but to our knowledge this is the first report of papaya infected with *Candidatus* phytoplasma asteries related strain in Peninsular Malaysia.

Keywords: Malaysia, Phytoplasma, RFLP, 16Sr group I
