

MOLECULAR DETECTION OF A NEW AND EMERGING BACTERIAL DISEASE OF JACKFRUIT IN PENINSULA MALAYSIA CAUSED BY *DICKEYA FANGZHONGDAI*

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A new bacterial fruit rot disease of jackfruit was observed in late 2016 in the jackfruit-growing area in *Taman Kekal Pengeluaran Makanan* (TKPM), Pahang, Malaysia. The disease has been continuously spreading and caused a huge economic loss to farmers in Malaysia. We observed the disease symptoms and attempted to analyze and identify its causal pathogen. In the initial stage of the disease, no obvious symptoms were observed on the outer surface of the fruit or on the other part of the tree. However, during disease development, brown discoloration appeared on the outer surface of the fruit and on the inner part of the fruit stalk. Infected fruits were later observed to exhibit an internal rot. Signs of symptom were not present on the other part of the tree (e.g., bark and leaves) and it was reported to affect both young and mature fruits. The symptomatic fruits were excised and the tissue samples were disinfected with 1% sodium hypochlorite for 2 min, then rinsed with sterilized water and placed on Luria-Bertani (LB) and Nutrient Agar (NA) media. Single colonies were transferred and maintained on NA. The isolates from infected tissue were Gram-negative and motile rods bacteria producing hyaline colonies on LB media and appeared creamy to white in color on NA media. The colony morphology of the bacterial isolates was circular to irregular shape with an unsmooth margin that is 2 mm wide after 48 h at 28°C. The 16s rDNA was amplified for the isolated strains using eubacteria fD2 and rP1 primers and sequenced. Sequences were compared with the NCBI database using BLASTn and showed 97% to 99% identity similarity to *Dickeya fangzhongdai*, strain JS5 (KT992690). Phylogenetic analyses of the sequences were conducted, using MEGA software, by the Maximum Likelihood method. The analysis indicated that the isolates from our study were clustered together in the clade of *D. fangzhongdai*. To test its pathogenicity, bacteria were grown overnight on Nutrient Broth (NB) medium, adjusted to 10⁸ cfu/ml and inoculated on healthy detached jackfruits. Characteristic symptoms of fruit rot disease appeared 2 days post-inoculation. No symptoms were observed in control fruits inoculated with sterile water. The pathogen was recovered from symptomatic fruits and confirmed as *D. fangzhongdai* using morphological characteristics on NA. Sequence data from isolated strain was deposited in GenBank (accession no. MH197139). The pathogen has been reported to cause bleeding canker of tree trunks on pear trees in China and soft rot disease on monocotyledonous plants in Europe. It was also reported to have been isolated from water samples. To the best of our knowledge, this is the first report of a new bacterial disease of jackfruit caused by *Dickeya* sp. in Malaysia. The bacterium is one of several bacterial diseases causing major losses of jackfruit in Malaysia.

Keywords: jackfruit, *Dickeya fangzhongdai*, fruit rot, PCR, bacterial disease