INTISARI

KARAKTERISASI MOLEKULER INFEKSI BEGOMOVIRUS PADA FAMILI SOLANACEAE DAN LEGUMINOSAE DI JAWA TIMUR

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Gejala khas infeksi Begomovirus yaitu daun menguning, mengeriting, cuping, mosaik, dan kerdil ditemukan pada tanaman famili Solanaceae dan Leguminosae di Jawa Timur. Teknik PCR menggunakan primer universal berhasil mendeteksi infeksi Begomovirus pada berbagai tanaman, namum belum dikombinasikan dengan primer spesifik. Penelitian ini bertujuan untuk mengetahui adanya variasi infeksi beberapa spesies begomovirus pada tanaman famili Solanaceae dan Leguminosae dan variasi gejala infeksinya pada kondisi geografis yang berbeda. Penelitian meliputi koleksi sampel tanaman, pengamatan variasi gejala infeksi Begomovirus, deteksi molekuler menggunakan primer spesifik *Mungbean yellow mosaic virus* (MYMV), *Pepper yellow leaf curl virus* (PepYLCV), *Tomato yellow leaf curl virus* (TYLCV), dan *Tomato leaf curl virus* (ToLCV), serta analisis filogenetik. Metode yang digunakan dalam koleksi sampel adalah sampel terpilih pada tanaman famili Solanaceae meliputi cabai, tomat, dan terung, dan Leguminosae meliputi buncis dan kacang panjang. Koleksi sampel dilakukan di tiga kondisi geografis yaitu dataran rendah di Kencong (Kediri), dataran menengah di Karangploso (Malang), dan dataran tinggi di Pujon (Malang). Hasil PCR menggunakan primer spesifik menunjukkan bahwa tanaman buncis di Kencong terdeteksi terinfeksi oleh TYLCV, PepYLCV, ToLCV, dan MYMV. Spesies MYMV terdeteksi menginfeksi tanaman buncis dan kacang panjang di Kencong, serta buncis di Pujon. Tanaman cabai, tomat, terung, buncis, dan kacang panjang di Kencong terdeteksi terinfeksi oleh PepYLCV dan ToLCV. Spesies TYLCV terdeteksi menginfeksi tanaman cabai, tomat, dan terung di semua lokasi, serta buncis di Kencong. Tanaman cabai, tomat, dan terong di semua lokasi tidak terdeteksi terinfeksi oleh MYMV. Spesies TYLCV tidak terdeteksi menginfeksi kacang panjang di semua lokasi. Tanaman kacang panjang di Pujon hanya terdeteksi terinfeksi oleh ToLCV dengan gejala ringan yaitu mosaik dan daun muda menguning. Gejala akibat infeksi Begomovirus pada tanaman sampel di Kencong lebih bervariasi daripada Karangploso dan Pujon. Gejala infeksi yang ditimbulkan dari masing-masing spesies begomovirus sangat bervariasi pada berbagai inang. Hasil analisis filogenetik menunjukkan bahwa spesies TYLCV isolat Kencong memiliki kekerabatan terdekat dengan TYLCKaV isolat cabai dan terung asal Indonesia. Spesies PepYLCV isolat Kencong memiliki kekerabatan terdekat dengan PepYLCV isolat *A. conyzoides* asal Indonesia. Spesies ToLCV isolat Kencong memiliki kekerabatan terdekat dengan ToLCNDV isolat timun asal Jawa Tengah. Spesies MYMV isolat Kencong memiliki kekerabatan terdekat dengan MYMIV asal Purwakarta dan MYMIV isolat kacang panjang asal Brebes.

Kata kunci: Begomovirus, ketinggian tempat, Leguminosae, MYMV, PepYLCV, Solanaceae, ToLCV, TYLCV

ABSTRACT

MOLECULAR CHARACTERIZATION OF BEGOMOVIRUS INFECTION ON FAMILY SOLANACEAE AND LEGUMINOSAE IN EAST JAVA

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Typical symptoms of Begomovirus infection such as leaf yellowing, leaf curling, leaf cupping, mosaic, and plant stunting were found in family Solanaceae and Leguminosae in East Java. The PCR technique using a universal primer successfully detects Begomovirus infection in various plants, but has not been combined with specific primers. This study aims to determine the variation of infection of several species of Begomoviruses in the family Solanaceae and Leguminosae and the variation of symptoms of infection in different geographical conditions. The researches were started by collecting of plant samples, observing of variation of symptoms of Begomovirus infection, molecular detection using specific primers for *Mungbean yellow mosaic virus* (MYMV), *Pepper yellow leaf curl virus* (TYLCV), *Tomato yellow leaf curl virus* (TYLCV), and *Tomato leaf curl virus* (ToLCV), and phylogenic analysis. The methods used in the sample collection was the purposive sampling in the plant of family Solanaceae including chilli, tomato, and eggplant, and the family Leguminosae including common beans and yardlong bean. The sample collection was conducted from three geographical conditions including lowlands in Kencong (Kediri), middle lands in Karangploso (Malang), and highlands in Pujon (Malang). PCR results using a specific primer showed that common beans in Kencong were infected by TYLCV, PepYLCV, ToLCV, and MYMV. MYMV infected not only on common beans and yardlong bean in Kencong but also common beans in Pujon. Plants of chilli, tomato, eggplant, common beans, and yardlong bean in Kencong were infected by PepYLCV and ToLCV. TYLCV was infected chilli, tomato, and eggplant in all locations, and common beans in Kencong. Chilli, tomato, and eggplant from all locations were not infected by MYMV. TYLCV did not infect yardlong bean in all locations. Yardlong bean in Pujon was only infected by ToLCV with mild mosaic symptoms and yellowing on young leaves. Symptoms of Begomovirus infection found in the samples from Kencong were more varied rather than those found in Karangploso and Pujon. Symptoms of infection caused by each species of Begomoviruses vary greatly among hosts. The results of the phylogenetic analysis showed that the TYLCV Kencong isolate had the highest homologies with TYLCKaV chilli and eggplant isolates from Indonesia. PepYLCV Kencong isolate had the highest homologies with PepYLCV *A. conyzoides* isolate from Indonesia. ToLCV Kencong isolate had the highest homologies with ToLCNDV cucumber isolate from Central Java. MYMV Kencong isolate had the highest homologies with MYMIV isolate from Purwakarta and MYMIV yardlong bean isolate from Brebes.

Keywords: altitude, Begomovirus, Leguminosae, MYMV, PepYLCV, Solanaceae, ToLCV, TYLCV