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MOLECULAR DETECTION OF BEGAMOVIRUS ASSOCIATED WITH LEAF CURL COMPLEX OF CHILLI IN SRI LANKA

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Chilli Leaf Curl Complex (CLCC) is a serious biotic threat to chilli cultivation in Sri Lanka and causes substantial yield losses. CLCC is a result of chilli leaf curl virus (CLCV) infection and infestations due to thrips and mites. Plants infected with CLCC show a wide range of virus-related symptoms including leaf curl, leaf crumple, foliar mosaic, mottle, yellow discoloration of leaves, vein clearing and stunted growth of the plant. CLCV is a whitefly-transmitted virus belonging to the begomovirus group. In addition to CLCV, CLCC is associated with several other viruses belonging to different virus groups. However, due to the complex nature of CLCC symptoms and the complexity of etiology, identification of CLCV infections based on symptoms is not practically possible and conclusions are unreliable. Hence, molecular detection is essential and the Polymerase Chain Reaction (PCR) using virus specific primers is a possible option for effective, reliable and rapid diagnosis. The present study was conducted to detect begamovirus in CLCC-infected chilli plants by the PCR technique.

Chilli plants showing typical CLCC symptoms were collected and subjected to PCR using begamovirus specific primers (i.e. Bega CPF/Bega CPR) with an initial denaturation at 94 ^{o}C for 2 min followed by 34 cycles at 94 ^{o}C for 1 min., 50 ^{o}C for 45 sec and 72 ^{o}C for 90 sec and a final extension at 72 ^{o}C for 10 min.. Size of the expected PCR product was 771 bp. PCR products having the estimated size were subjected to direct DNA sequencing for confirmation. The sequence of the PCR products amplified by Bega CPR/ Bega CPF shared 82% nucleotide sequence identity with Chilli leaf curl Salem virus-India (Accession no. HM007119.1) and Chilli leaf curl virus-Bhavanisagar (Accession no. HM992939.1). The sequence of the PCR products also shared more than 90% nucleotide identity with tomato leaf curl Sri Lanka virus (Accession no. AF274349.1) confirming the reliability of PCR products obtained from the chilli plants infected with CLCC.

Therefore, the present study confirmed the use of Bega CPR/ Bega CPF primers for successful detection of begamovirus infections in CLCC-infected plant samples when amplified under above PCR conditions.

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