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International Virology Conference

October 30-31, 2017 | Toronto, Canada

Diversity of geminivirus associated alphasatellites from different cultivated and non-cultivated plants in Pakistan

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The viruses belonging to the genus *Begomovirus* are whitefly transmitted monopartite or bipartite viruses. The monopartite *begomovirus*es with their associated satellite-like molecules Alphasatellites are believed to be involved in enhancing the replication of virus and have a major role in breaking host defence. The study presented here involved scanning of different cultivated and non-cultivated plants to detect and isolate new complexes. Samples of leaves were collected from different areas of Punjab, Pakistan and screened for presence of DNA-A, alphasatellite and betasatellite molecules through PCR. A total of 8 alphasatellite, 5 betasatellite and 1 DNA-A full length genome was reported. Phylogenetic studies of alphasatellite molecules were made. 6 sequences isolated from cotton leaves collected from Vihari had close resemblance of up to 90 % similarity with satellite molecules of PaLCuA (*Papaya leaf curl alphasatellite*) and could be new strains of PaLCuA first time reported from cotton plants. The sequence MJ-24[CLCuMA-PK-Multan-cotton] reported from Multan displayed 98% similarity with CLCuMA (*Cotton leaf curl Multan alphasatellite*) indicating that it is a variant of CLCuMA. MJ-25[GDSA-PK-Multan-cotton] also reported from Multan was classified as a new strain of GDSA (*Gossypium dawanii symptomless alphasatellite*) with a score of 93% similarity. Phylogenetic tree further confirmed the results. An analysis of ORF with Rep coding sequence of alphasatellites was made by comparison with earlier reported protein sequences in the database. Results revealed highly conserved regions of Rep domain and helicase binding domain. Only one sequence MJ-25 displayed some substitutions in the Rep domain. Other substitutions were observed in central region or hydroxyl end of protein.

Speaker Biography

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