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Analysis of sequence diversity and assessment of infectivity of begomovirus infection on grain legume *Phaseolus vulgaris* L. in India

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Viral diseases on crop plants are major havoc for the reduction in the yield, both qualitatively and quantitatively. Geminiviridae constitute an important group of plant pathogens with genomes of ss DNA and is characterized by particle morphology of twinned incomplete icosahedra. Whitefly-transmitted geminiviruses (genus Begomovirus) infect variety of plants of economic importance including tomato, chilli, legumes, okra etc. in tropical and sub-tropical region. Hence, begomoviruses are greater menace in the agriculture due to new and resistant biotype of whitefly.

French bean has established its importance in Indian horticulture due its exceptional nutritional value and also plays pivotal role in Indian Economy and sustainability of Indian agriculture. Amongst the various factors affecting yield and quality of the crop, viruses are becoming most potent threats tropically and sub tropically. Legume yellow mosaic viruses (LYMVs), responsible for yellow mosaic disease (YMD) in grain legumes, comprised of four different begomovirus species, viz. Mungbean Yellow mosaic India Virus, Horsegram yellow mosaic virus, Dolichos yellow mosaic virus and Mungbean Yellow mosaic Virus. Our aim was to assess diversity of begomoviral genome infecting to *Phaseolus vulgaris* L. We have cloned and characterized begomoviral genomic components associated with bean dwarf mosaic disease (BDMD) manifested leaf samples from Varanasi and Bangalore. Our results confirm that two distinct virus cause disease in French bean grown in geographically separated area. Host – pathogen interactions was studied by proteomic approach. The host proteins involved in defense, signal transduction and metabolism are modulated upon active virus infection. Overall, this study will throw a light on more integrative picture of the nature of BDMD. Understanding of molecular and functional aspects of viral infections will be beneficial in formulating better resistant strategies for viral disease management in French bean without compromising nutritional quality or yield.

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