

ABSTRACT

Molecular Characterization of Begomoviruses Associated with the Common Jamaican Weeds, *Boerhavia coccinea* and *Jatropha gossypifolia*

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Boerhavia coccinea and *Jatropha gossypifolia* are two common Jamaican weeds usually seen with yellow mosaic symptoms typical of geminivirus infection. Plant material was collected from *J. gossypifolia* from Spanish Town (2004) and *B. coccinea* from Mona (2008) displaying leaf distortion and yellow mosaic. Total DNA was extracted using a modified version of the Dellaporta method. Previously obtained partial sequences were used to design overlapping primers and used for the amplification of the complete genome of the putative *Jatropha* virus and the DNA A component for the putative *Boerhavia* virus

The sequences obtained were used in Basic Local Alignment Search Tool (BLAST) searches and Clustal V alignment with other geminiviruses representative of: Jamaican species, most similar from BLAST, the four Western Hemisphere clades (Faria et al. 1994, 324), and non-begomovirus species within the *Geminiviridae* family. The results of the Clustal V alignment identified *Jatropha* virus as a strain of *Jatropha mosaic virus* and *Boerhavia* virus as a novel species, based on the 89% rule of the International Committee on Taxonomy of Viruses (ICTV). The Jamaican *Jatropha* virus was named *Jatropha mosaic virus*-[Jamaica:Spanish Town:2004] (JMV-[JM:ST:04]) and represents the first complete sequence of JMV from the Western Hemisphere (Simmonds-Gordon et al., 2014; Appendix C). JMV-[JM:ST:04]DNA A shared highest identities with two strains of JMV from the Dominican Republic and Florida: *Jatropha mosaic virus*-[Dominican Republic: Aguacatico: Ag-14: 2010] (JMV-[DO:Agu:Ag-14:10], 90.3%); *Jatropha mosaic virus*-[Dominican Republic: Aguacatico:Ag-2:2013] (JMV-[DO:Agu:Ag-2:13], 90.2%) and; *Jatropha mosaic virus*-[United States:Florida:1985] (JMV-[US:FL:85], 90.2%). The DNA B shared 83.9% identity with the cognate DNA B of all three viruses. The *Boerhavia* virus shared highest identities with several rhynchosia viruses from the region and *Merremia mosaic* Puerto Rico virus: *Rhynchosia golden mosaic virus*-Soybean[Mexico:Sinaloa 4:Soybean:2007] (RhGMV-Sb[MX:Sin4:Sb:07], 72.8%); *Merremia*

mosaic Puerto Rico virus-[Puerto Rico:PR89:1998] (MeMPRV-[PR:PR89:98], 71.6%); Rhynchosia golden mosaic virus-[Mexico[Mexico:Sinaloa 3:2007] (RhGMV-MX[MX:Sin3:07], 71.6%) and; Rhynchosia mild mosaic virus-[Puerto Rico:PR79:1997] (RhMMV-[PR:PR79:97], 71.4%). The *Boerhaviavirus* was tentatively named *Boerhavia mosaic virus*-[Jamaica: Mona:2008] (BMV-[JM:Mon:08]) and is a previously unreported virus.

Keywords: Raxon Simmonds-Gordon; begomoviruses; *Boerhavia coccinea* *Jatropha gossypifolia*; Jamaican weeds.

