CHARACTERIZATION OF A NEW WHITEFLY-TRANSMITTED (*Bemisia tabaci* Meam 1) CYTORHABDOVIRUS INFECTING COMMON BEAN

Bruna Pinheiro de Lima[1]; Dione Mendes Teixeira Alves-Freitas[2]; Fernando Lucas de Melo[1]; Rita de Cássia Pereira Carvalho[1]; Josias Correa de Faria[3]; Simone Graça Ribeiro[21]

Universidade de Brasília, [2] Embrapa Recursos Genéticos e Biotecnologia, [3] Embrapa Arroz e Feijão; *pinheiro.limab@gmail.com*

Common bean (*Phaseolus vulgaris*) is an important crop in Latin America and Africa. The bean yield may be affected by the incidence of different viruses. As part of a virus survey in beans, we have used high-throughput sequencing approach to identify viruses with RNA genome in bean plants collected in Goiás (GO) state. Bioinformatic analysis of the *de novo*assembled contigs identified a putative cytorhabdovirus (family *Rhabdoviridae*) with low similarities with *Northern cereal mosaic virus* (NCMV). This new cytorhabdovirus was denominated Bean associated cytorhabdovirus (BaC). Cytorhabdoviruses have enveloped particles, negative ssRNA of 11-14 kb genome and are usually transmitted by aphids or leafhoppers. An isolate from Luziânia, GO, (BaC_Luz) was used for the virus characterization. The 3' and 5' ends of BaC were identified by RACE (Rapid Amplification cDNAs Ends). The complete BaC_Luz genome was recovered by PCR of six overlapping fragments and is 13,449 nt in length. The genome presents five essential genes common to rhabdoviruses (N: nucleoprotein, P: phosphoprotein, M: matrix protein, G: glycoprotein and L: polymerase) flanked by two non-transcribed leader and trailer regions. In addition, a gene encoding a likely movement protein is located between P and M. Phylogenetic analyzes conducted with the amino acid sequence of the nucleoprotein showed that BaC clustered together with members of the genus *Cytorhabdovirus*. BaC grouped in the same clade as NCMV and Barley yellow striate mosaic virus that infect monocotyledons and are transmitted by leafhoppers, but in a different branch of the clade. BaC_Luz was transmitted by whiteflies from a field-infected plant to 'Jalo', 'Pérola' and 'BRS FC 401 RMD' beans with an inoculation access period (IAP) of 14 days, resulting in 100% of transmission efficiency. Under more controlled conditions, aviruliferous adult whiteflies were given a seven-day acquisition access period in infected bean plants and subsequent seven-day IAP in healthy plantlets were tested. Under these conditions, BaC could be transmitted to soybean (*Glycine max*) 'BR16', cowpea (*Vigna unguiculata*) and common bean 'BRS FC 401 RMD', with 25, 50 and 75% transmission rate, respectively. This study presents novel data reporting the identification of the first rhabdovirus infecting beans and for the first time a virus member of the family *Rhabdoviridae* vectored by *Bemisia tabaci* MEAM1. **Financial**

Support: Embrapa, CNPq, CAPES and FapDF.

Palavras-chave: *Phaseolus vulgaris*; *Cytorhabdovirus; Bemisia tabaci*