



# First report of cucumber mosaic virus infecting banana (*Musa* spp.) in Korea

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In June 2020, virus-like symptoms such as mosaic patterns, chlorosis, and leaf curl were observed on the leaves of banana plants grown in a greenhouse in Seogwipo city, Jeju Island, Korea. Total RNA was extracted from a pooled sample from 15 individual banana leaves. The library was synthesized and analyzed using an Illumina HiSeq4000 sequencer from Macrogen (Korea). In total, 34,529,956 reads were obtained, and among them, 4,559,601 reads were mapped to cucumber mosaic virus (CMV). Raw reads were *de novo* assembled to contigs using gsAssembler v2.8 and blasted against the NCBI virus genome database. Results revealed that three contigs of 3,329 nt, 3,015 nt, and 2,185 nt shared highest identity (98.13–99.23%) to CMV RNAs 1–3 (LC066405, LC604033, and KR535607). To confirm CMV infection, total RNA was extracted from six symptomatic and two asymptomatic leaf samples and subjected to RT-PCR with cucumovirus-specific primers (Choi et al. 1999). As expected, 940 bp PCR products including the complete CP gene were obtained from symptomatic but not asymptomatic leaves. The PCR products were cloned and subjected to Sanger sequencing. The complete 657 nt CP sequences of all PCR products were identical, and was deposited to GenBank (LC604881). CMV isolate BJK CP showed highest nt identity of 99.70–99.24% identity to that of isolates from Korea (KR535607, passion fruit), Japan (LC066461, *Raphanus sativus*), and Iran (MH782240, *Cucurbita pepo*).

Phylogenetic analysis indicated that CMV-BJK belonged to the subgroup IA. Sap inoculation caused typical CMV symptoms of mild mosaic and stunting in *Nicotiana benthamiana* (Phan et al. 2014) at 10 days post inoculation. The presence of CMV was confirmed using RT-PCR with the aforementioned primers. To the best of our knowledge, this is the first report of CMV infecting banana plants in Korea.

## Declarations

**Conflict of interest** The authors declare that they have no conflict of interest.

**Ethical approval** This article does not contain any studies with human participants or animals performed by any of the authors.

## References

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