

学 位 論 文 要 旨	
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題 目	<p>Studies on molecular classification and propagation of a new species of potyvirus infecting Passifloraceae plants</p> <p>(トケイソウ科植物に感染する新種の potyvirus の分子分類と増殖に関する研究)</p>
<p>Viruses assumed to belong to a new potyvirus were detected in passionfruit plants with foliar mosaic, leaf curl and fruit malformation that were collected from Akita City, Akita Prefecture in 2013, Nago City, Okinawa Prefecture in 2014, and Satsuma Town and Yoron Island, Kagoshima Prefecture in 2015. The isolates of this virus species were not detected by ELISA and RT-PCR targeting East Asian Passiflora virus (EAPV)-AO (Amami Oshima strain), which induces woodiness disease of passionfruit in Japan. The isolates were designated PV-AK (Akita), PV-OK (Okinawa), PV-YO (Yoron), and PV-SA (Satsuma). In a host-range test of 13 cultivars of French bean, four were systemically infected with the PV isolates and two with EAPV-AO. Cowpea cv. Kurodane sanjaku was systemically infected with PV isolates and induced mosaic symptoms on non-inoculated leaves distant from the inoculated leaves but was immune to EAPV-AO. The complete genomic sequences of the PV isolates consisted of 9973 nucleotides (nt) excluding the poly(A) tail, and encoded 3217 amino acids of polyprotein, flanked by 129-130 nt of the 5'-noncoding region and 193 nt of the 3'-noncoding region. Whole-genome nucleotide and amino acid sequences indicated that they belong to identical species. The potyvirus with the highest whole genome nucleotide identity to the PV isolates is watermelon mosaic virus, which shares 68.1% identity, versus 65.3% for EAPV-AO. On the basis of ICTV-naming regulations, these PV isolates belong to a new species in the Potyvirus genus but are distantly related to EAPV. Here, East Asian Passiflora distortion virus was proposed as the new species name.</p> <p>EAPV-AO and EAPDV were found to coinfect passionfruit in Okinawa prefecture, Japan. In this study, the effects of dual infections with those viruses in <i>P. foetida</i>, a wild passionfruit species, were investigated. Dual inoculation with EAPV (A) and EAPDV (D) results in different symptoms and viral accumulation on <i>P. foetida</i>. Mixed inoculation (A+D) and EAPV followed by EAPDV inoculation (A→D) caused the most severe symptoms on leaves at 28 dpi. EAPDV followed by EAPV infection (D→A) induced milder symptoms than A+D and A→D, and single infection with EAPDV caused the mildest symptoms. Quantitative analysis revealed that the log₁₀ of EAPDV titer was 1.85-, 1.52-, and 1.56-fold in D→A, A→D, and A+D, respectively, compared with a single infection with EAPDV. EAPV titer was constantly lower than EAPDV titer. In summary, it was revealed that EAPV promotes the proliferation of EAPDV by coexistence, and that <i>P. foetida</i> is a potential reservoir for EAPV and EAPDV.</p>	