



First report of the *Olpidium virulentus*–mediated transmission of blueberry mosaic-associated virus in blueberries in Turkey

Kadriye Çağlayan¹ · Rengin Akkan¹ · Mona Gazel¹ · Fatih Mehmet Tok¹

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The ability of *Olpidium* spp. as a vector of blueberry mosaic-associated virus (BIMaV) was evaluated in blueberry fields in Rize province of Turkey during spring of 2019. Ten BIMaV infected blueberry plants were selected from one commercial and two wild blueberry sites according to RT-PCR assays with primers specific to a nucleocapsid protein (NP) gene of BIMaV (Isogai et al. 2016). Soil samples were collected from the rhizosphere of these BIMaV infected plants for transmission experiments. The roots of infected blueberries were directly examined under light microscope and tested by PCR using species specific primers for *O. brassicae*, *O. virulentus* and *O. bornovanus* (Herrera-Vásquez et al. 2009). No *olpidium* resting spores were observed under microscope and no amplification was obtained by PCR analyses. Therefore, lettuce seedlings and blueberry plants (cv. Bluecrop) that tested negative for all known blueberry viruses including BIMaV were planted in pots containing soil samples collected from the rhizosphere of BIMaV-infected plants. Each treatment was replicated thrice and two negative controls were used for each location with 10 soil samples for a total of 96 test plants. Four weeks after planting, the first resting spores of *Olpidium* spp. were observed both on the roots of lettuce and blueberries. These results were confirmed by PCR analysis with the detection of *O. virulentus* (OV). While OV was detected in 10 blueberry and 13 lettuce planted in 20 soil samples from wild blueberry sites, it was detected in two blueberry and six lettuce planted in 10 soil samples from cultivated blueberry site. OV isolates from wild (N=3) and cultivated (N=3) blueberry sites were sequenced (MW483635-483640) and showed 96.78% similarity with a California isolate

(KY905661). Similar results were obtained from OV-lettuce isolates from wild (N=2) and cultivated (N=2) blueberry sites (MW489825-489828) which showed 97.38% similarity with the same isolate. When the roots of lettuce and blueberry plants were tested for BIMaV by RT-PCR, the infection rate was 100% (90 of 90) in blueberries and 67.7% (61 of 90) in lettuce despite no obvious virus symptoms. BLASTn analysis of BIMaV sequences from blueberries (MW422218-422220) and lettuce (MW422205-422207) showed very high similarity (>97%) with a Japanese BIMaV isolate (LC066301). No *Olpidium* spp. and BIMaV infection were detected in the test plants grown in sterile peat used as negative control. To our knowledge, it is the first report of *O. virulentus* as a vector of BIMaV within blueberry sites in Turkey. Lettuce is also reported here for the first time as an experimental host of BIMaV.

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✉ Kadriye Çağlayan
kcaglayan@yahoo.com

¹ Plant Protection Department, Mustafa Kemal University, Agriculture Faculty, Antakya Hatay, Turkey