



First report on the occurrence of grapevine rupestris stem pitting-associated virus in Moroccan grapevines

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Grapevine rupestris stem pitting-associated virus (GRSPaV), a member of the genus *Foveavirus* in the family *Betaflexiviridae*, has a high genetic variability (Meng and Rowhani 2017); some strains are putatively associated with Rupestris stem-pitting disease, a component of the Rugose Wood complex of the grapevine. To assess the viral status of grapevine in Meknès region (the central part of Morocco), a total of 35 samples of cv. ‘Cinsaut’ were randomly collected in 2013 from the same vineyard. After total RNA extraction and cDNA synthesis, the presence of GRSPaV was checked by PCR using two sets of primers: RSP-52 (5′-TGAAGCCTTAGGG GTTAG-3′) and RSP-53 (5′-CTTAACCCAGCCTTGAAT-3′) that amplify the complete (905 bp) coat protein (CP) gene (Rowhani et al. 2000) and RSPaV13 (5′-GATG AGGTCCAGTTGTTTCC-3′) and RSPaV14 (5′-ATCC AAAGGACCTTTTGACC-3′) that amplify a partial fragment (338 bp) within the helicase domain of ORF1 (Meng et al. 1999). Five samples reacted positively and showed amplicons of the expected sizes using both sets of primers. PCR products of the CP gene originated from the positive samples were purified and sequenced in both directions. The obtained sequences were identical; one of those sequences was deposited in GenBank (accession number MH156797). Nucleotide blast analysis of the Moroccan isolate showed 98% sequence identity with a

French one within group I (SGM5–1; KX035004). To our knowledge, this is the first report of GRSPaV infecting grapevine in Morocco. Even if the number of the tested samples was relatively low, this result can help to understand the incidence of GRSPaV that seems to be unexpectedly low if compared to other reports (Meng and Rowhani 2017). Due to the self-rooted condition of the old vineyard visited in the Meknes area, this low GRSPaV infection rate (five positive samples out of 35 tested) is conceivable, as this virus essentially spreads through vegetative propagation of infected sources or grafting with infected rootstocks. Moreover, (i) the strict homology with a French isolate could reflect the most likely common origin of this propagation material certainly before the introduction of grafting on American rootstocks, (ii) GRSPaV has no known vector, thus the local spread of mixed infections could have been happened only through overgrafting with budwood bearing different strains; finally (iii) the identification of a single dominant molecular variants is likely due to the direct sequencing of PCR products, that may conceal minor variants present in lower concentration. Further and wider investigations will disclose the clear picture of the GRSPaV relevance in Moroccan grape germplasm.

References

- Meng B, Rowhani A (2017) Grapevine stem pitting-associated virus. In: Meng B, Martelli G, Golino D, Fuchs M (eds) *Grapevine viruses: molecular biology, diagnostics and management*. Springer, Cham, pp 257–258
- Meng B, Johnson R, Peressini S, Forsline PL, Gonsalves D (1999) Rupestris stem pitting associated virus-1 is consistently detected in Rupestris stem pitting-infected grapevines. *Eur J Plant Pathol* 105: 191–199
- Rowhani A, Zhang Y-P, Chin J, Minafra A, Golino DA, Uyemoto JK (2000) Grapevine rupestris stem pitting associated virus: population diversity, titer in the host and possible transmission vector. In: *13th International Council for the Study of Viruses and Virus-like Diseases of the Grapevine*, Australia 2000, Extended Abstracts

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