Comparison of a retrotransposon-based marker with microsatellite markers for discriminating accessions of *Vitis vinifera*

G.C. Sant'Ana[1], J.L. Ferreira[2], H.S. Rocha[2], A. Borém[1], M. Pasqual[3] and G.M.A. Cançado[2]

[1]Departamento de Fitotecnia, Universidade Federal de Viçosa, Viçosa, MG, Brasil
[2]Laboratório de Biotecnologia Vegetal,
Empresa de Pesquisa Agropecuária de Minas Gerais,
Caldas, MG, Brasil
[3]Departamento de Agricultura, Universidade Federal de Lavras, Lavras, MG, Brasil

Corresponding author: G.M.A. Cançado
E-mail: cancado@epamig.br

ABSTRACT. Identification and knowledge concerning genetic diversity are fundamental for efficient management and use of grapevine germplasm. Recently, new types of molecular markers have been developed, such as retrotransposon-based markers. Because of their multilocus pattern, retrotransposon-based markers might be able to differentiate grapevine accessions with just one pair of primers. In order to evaluate the efficiency of this type of marker, we compared retrotransposon marker *Tvv*1 with seven microsatellite markers frequently used for genotyping of the genus *Vitis* (VVMD7, VVMD25, VVMD5, VVMD27, VVMD31, VVS2, and VZAG62). The reference population that we used consisted of 26 accessions of *Vitis*, including seven European varieties of *Vitis vinifera*, four North American varieties and hybrids of *Vitis labrusca*, and 15 rootstock hybrids obtained from

crosses of several *Vitis* species. Individually, the *Tvv*1 and the group of seven SSR markers were capable of distinguishing all accessions except 'White Niagara' compared to 'Red Niagara'. Using the Structure software, the retrotransposon marker *Tvv*1 generated two clusters: one with *V. vinifera* plus North American varieties and the other comprising rootstocks. The seven SSR markers generated five clusters: *V. vinifera*, the North American varieties, and three groups of rootstock hybrids. The percentages of variation explained by the first two components in the principal coordinate analysis were 65.21 (*Tvv*1) and 50.42 (SSR markers) while the Mantel correlation between the distance matrixes generated by the two types of markers was 42.5%. We conclude that the *Tvv*1 marker is useful for DNA fingerprinting, but it lacks efficiency for discrimination of structured groups.