

CHARACTERIZATION OF SIMPLE POLYPHENOLS IN SEEDS OF AUTOCHTHONOUS GRAPEVINE VARIETIES GROWN IN CROATIA (VITIS VINIFERA L.)

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Abstract:

Context and purpose of the study – Croatia has rich grapevine genetic resources with more than 125 autochthonous varieties preserved. Coastal region of Croatia, Dalmatia, is well known for wine production based on autochthonous grapevine varieties. Nevertheless, only couple of these are widely cultivated and have greater economic importance. Grape seeds are sources of polyphenols which play an important role in organoleptic and nutritional value of grape and wine. Hence, the aim of this study was to evaluate the simple polyphenols from grape seeds in 20 rare autochthonous grapevine varieties.

Material and methods – Samples were collected during two consecutive years (2011. and 2012.) from germplasm collection in Split (Dalmatia). Grape samples were constituted of five bunches of fully ripe grapes. Seeds were manually separated, freeze-dried, grounded and stored at a low temperature until analyses. Polyphenolic compounds were analysed using HPLC analysis.

Results – Eight polyphenolic compounds, gallic acid, monomeric flavan-3-ols (catechin, epicatechin, galocatechin and epicatechin 3-O-gallate) and procyanidin dimers (B1, B2 and B4) were detected. According to the investigated polyphenolic compounds significant differences between investigated varieties were found. Gallic acid content ranged from 91.0 to 245.08 total monomeric flavan-3-ols from 619.2 to 13539.6 mg kg⁻¹ and total procyanidin dimers from 975.3 to 4140.2 mg kg⁻¹ of seed. Catechin (263.2 to 8124.2 mg kg⁻¹ seed) was found as main monomeric flavan-3-ol, epicatechin 3-O-gallate, galocatechin and epicatechin varied between 0-164.31, 37.19-155.07 and 277.5-5224.4 mg kg⁻¹ seed, respectively. Procyanidin B2 (420.2 to 2207.8 mg kg⁻¹ seed) was found as a main procyanidin dimer. Procyanidin B1 and B4 amount varied between 401.80-165.19 and 276,7-1539.4 mg kg⁻¹ seed, respectively. Gegić had lowest and varieties Plavac mali and Babić highest amount of all investigated polyphenolic compounds. This study presents the first evaluation of Croatian grapevine varieties by characterization of seed polyphenolic compounds and it shows huge variability among them. More detailed analysis of polyphenolic compounds in selected varieties are carry out in our further research activities.

Keywords: Grapevine, Autochthonous, Polyphenols, Seed, Croatia

1. Introduction.



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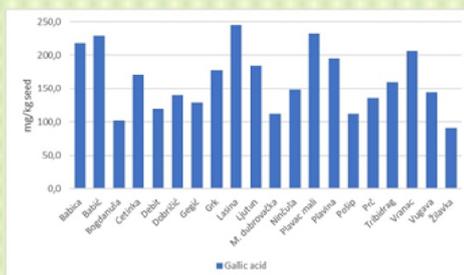
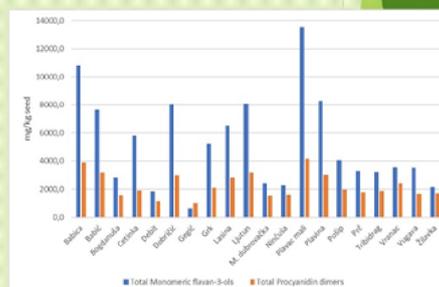
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The extraction was performed according to the method described by Tomaz et al. (2016) (I.; Tomaz et al. 2016). In brief, grape seed powder (125 mg) was extracted by a 10 mL of 20% aqueous acetonitrile containing 1% formic acid for 2 h at 50°C on magnetic stirrer. The obtained extract was filtered with Phenex-PTFE 0.20 µm syringe filter (Phenomenex, Torrance, USA) and analyzed by HPLC. The separation, identification and quantification of flavonoids from grape skin extracts were performed according to the method described by Tomaz and Maslov (I. Tomaz and Maslov 2016) on an Agilent 1100 Series system (Agilent, Germany).



Conclusions

This study presents the first evaluation of Croatian grapevine varieties by characterization of seed polyphenolic compounds and it shows huge variability among them. More detailed analysis of polyphenolic compounds in selected varieties are carried out in our further research activities.

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