Viticulture and oenology in Estonia. Polyphenols of wines of hybrid cultivars.

T Püssa¹, P Pedastsaar¹,², and K Karp²

¹ Department of Food Hygiene, Estonian University of Life Sciences, Kreutzwaldi 58A, 51014, Tartu, Estonia, ² Department of Horticulture, Estonian University of Life Science, Tartu, Estonia
Corresponding author: pyssa@emu.ee

Abstract

The purpose of the presentation is to provide a short introduction of viticulture and oenology in Estonia and to present some results obtained by comparing the wines of Vitis vinifera and hybrid grapevine cultivars.

About a hundred cultivars of grapevine are being tested in Estonia (northern latitude 57-59°), 12 of which are already in the list of recommended cultivars. For outdoor growing hybrid cultivars ‘Hasanski Sladki’, ‘Rondo’, ‘Zilga’, Kuzminki Sinii’, ‘Sukribe’, ‘Yubilei Novgoroda’, and ‘Silva’ are recommended.

The chemical composition of red wines was studied by high performance liquid chromatography-mass selective detection (LC-DAD-MS/MS). A number of various polyphenols was identified and quantified in the wines of Cabernet Sauvignon (Chile, France and Spain), Pinot Noir (Romania), and Shiraz and Merlot (South Africa), all belonging to species V. vinifera as well as hybridic Rondo (over 50% of V. vinifera) and a blend of hybridic Rondo, Zilga and Hasanski Sladki, Estonia.

The anthocyanins’ content and profile is species and cultivar-dependent, whereas the wines of hybrid cultivars are distinguished by a wider variety of anthocyanins, including derivatives of pelargonidine.

Stilbenes are represented by trans-resveratrol, its glucosides (piceid and resveratroloside), and traces of resveratrol dimers and piceatannol. The total content of hydroxystilbenes was the highest in the wines of Merlot and Pinot Noir. The concentration of aglyconic resveratrol was the highest in the wines of Pinot Noir. Flavanols contain aglyconic quercetin, myricetin and kaempferol as well as their glycosides. Wines of hybrid grapes are characterized by higher concentrations of glycosides, whilst wines of ‘Shiraz’ and ‘Cabernet Sauvignon’ contain more aglycones. The wine of ‘Pinot Noir’ had very low concentration of flavonols. For the content of flavan-3-ols, wines of Pinot Noir and of hybrid grapevines stand out.

Wines from the berries of hybrid cultivars are not outshone by the classical wines of Vitis vinifera in terms of several characteristics.