

Profile of anthocyanins and antioxidant activity from five Greek red grapes varieties

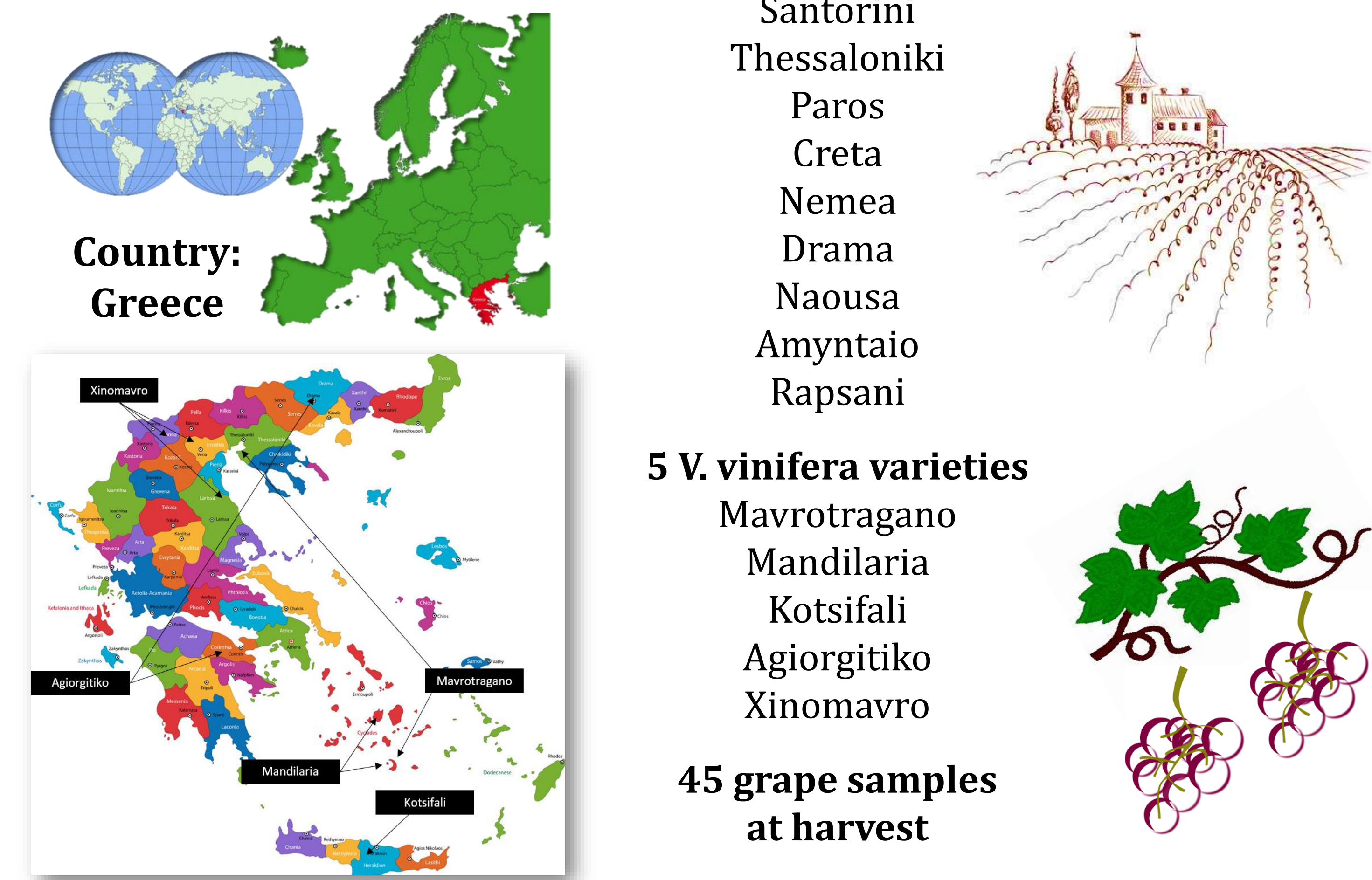
Kyraleou, M.¹, Kallithraka, S.¹, Koundouras, S.², Kotseridis, Y.¹, Gkanidi, E.¹
¹Laboratory of Oenology, Department of Food Science & Human Nutrition, Agricultural University of Athens, 75 Iera Odos, 11855 Athens, Greece
²Laboratory of Viticulture, School of Agriculture, Aristotle University of Thessaloniki, 54124, Thessaloniki, Greece



Introduction

Anthocyanins are responsible for important quality attributes of red grapes and wines, such as colour intensity and stability. The profile of grape anthocyanins is characteristic of each variety, and some authors have used it to classify grape cultivars [1]. The most common 3-O-glucoside derivatives of anthocyanidins in *V. vinifera* grapes are delphinidin-3-O-glucoside (Dlp), cyanidin-3- O-glucoside (Cy), petunidin-3-O-glucoside (Pt), peonidin-3- O-glucoside (Pn) and malvidin-3-O-glucoside (Mlv). The main anthocyanin in most of *V. Vinifera* winegrape varieties is Mlv [1]. In this study the profile of anthocyanins from five Greek *Vitis vinifera* varieties, namely 'Mavrotragano', 'Mandilaria', 'Kotsifali', 'Agiorgitiko' and 'Xinomavro' were analyzed by HPLC and the antioxidant capacity (AC) of the anthocyanin skin extracts was also determined. The aim of this study is to evaluate the varietal potential of different regions in Greece and to expand our knowledge of the impact of environmental factors on the grape anthocyanins.

Experimental Design



Results

According to the results DlpAc, CyAc and PnCoum were not detected in the samples. The predominant anthocyanin in four out of the five varieties was Mlv, with the exception of 'Kotsifali' in which Pn was the major anthocyanin detected. Moreover, 'Kotsifali' was characterized by the absence of acetylated anthocyanins and the lower levels of coumaroylated anthocyanins of skin extracts, compared to the other varieties (Fig. 1).

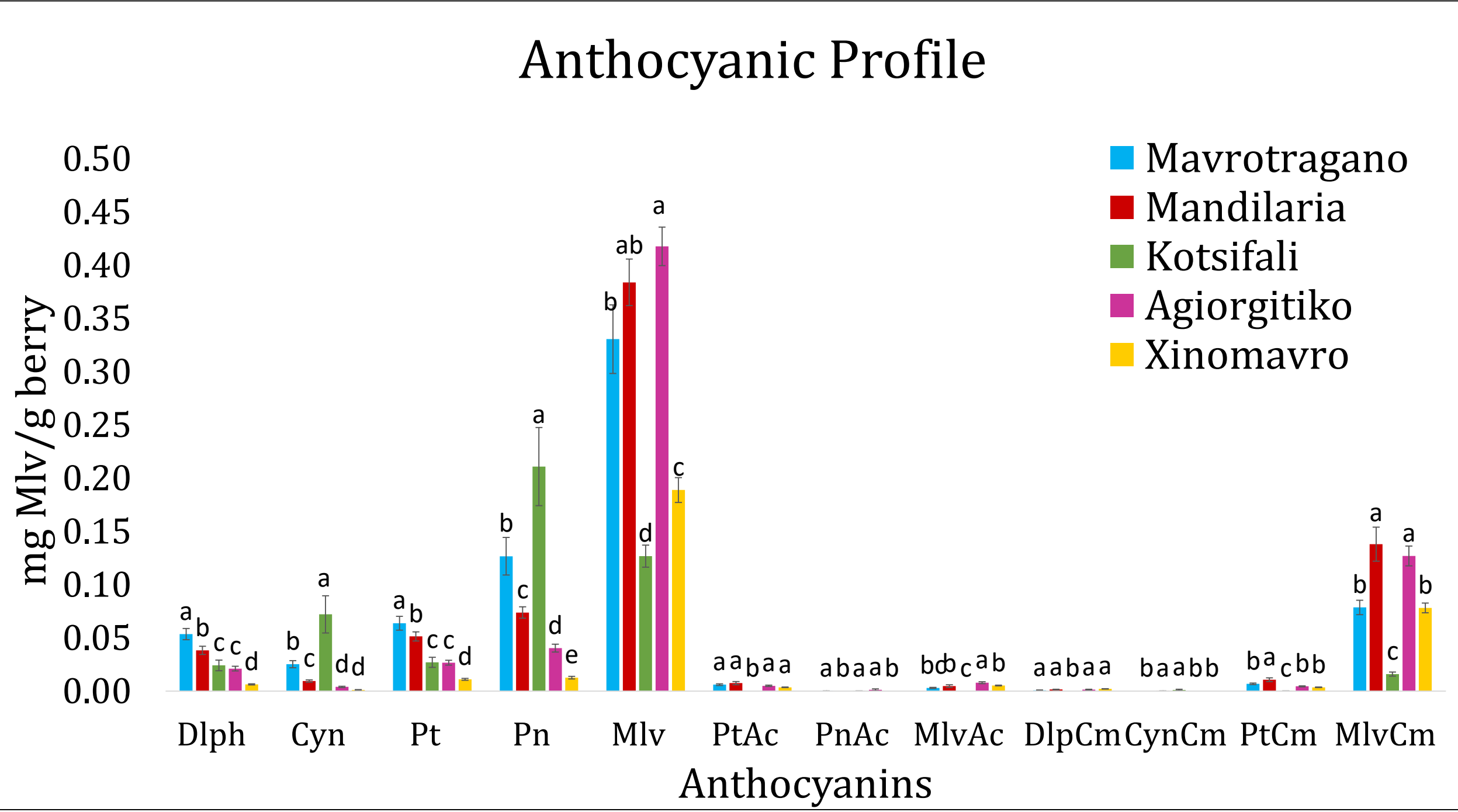
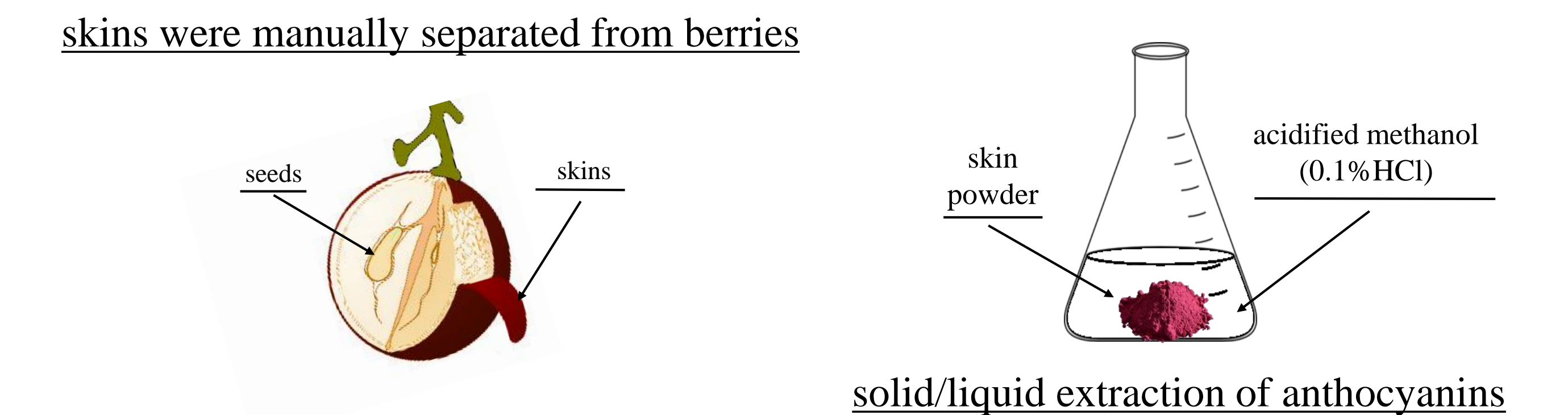


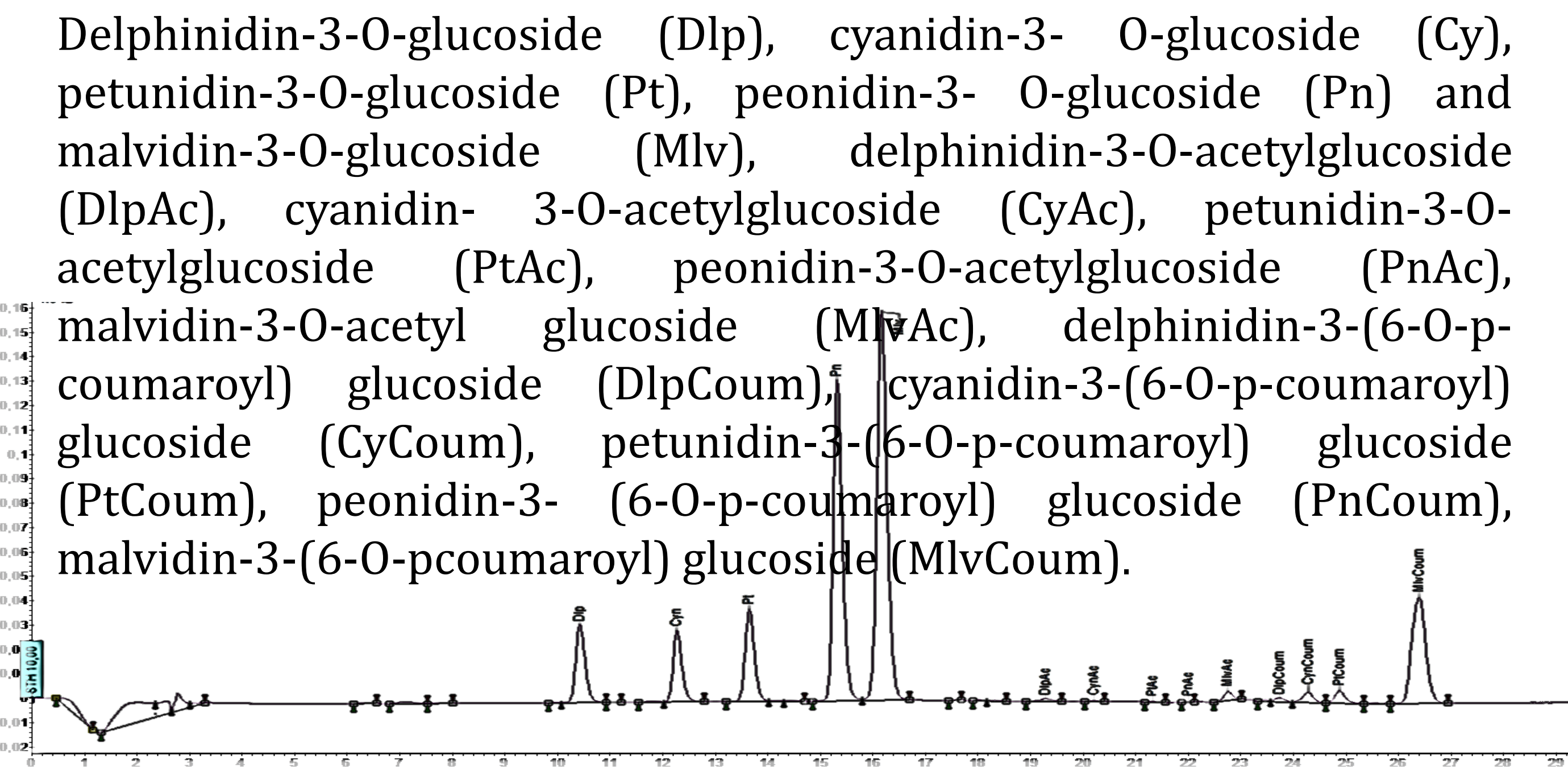
Figure 1. Anthocyanic profile of five red winegrape varieties expressed as mg Mlv/g berry

Methods

Grape Sample Preparation & Extraction [2]



Anthocyanic profile HPLC determination [1,2] of:



Antioxidant Capacity

Antioxidant capacity of anthocyanins was determined, by the 2,2'-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging method, in skin extracts [3]

Total monomeric anthocyanins varied from 313 to 720 mg kg⁻¹ fresh berry weight, with the higher content determined for 'Mandilaria' and the lower for 'Xinomavro'. Varieties with higher concentrations of total anthocyanins (Mandilaria and Mavrotragano) also demonstrated significantly higher values of antioxidant capacity (Fig. 2).

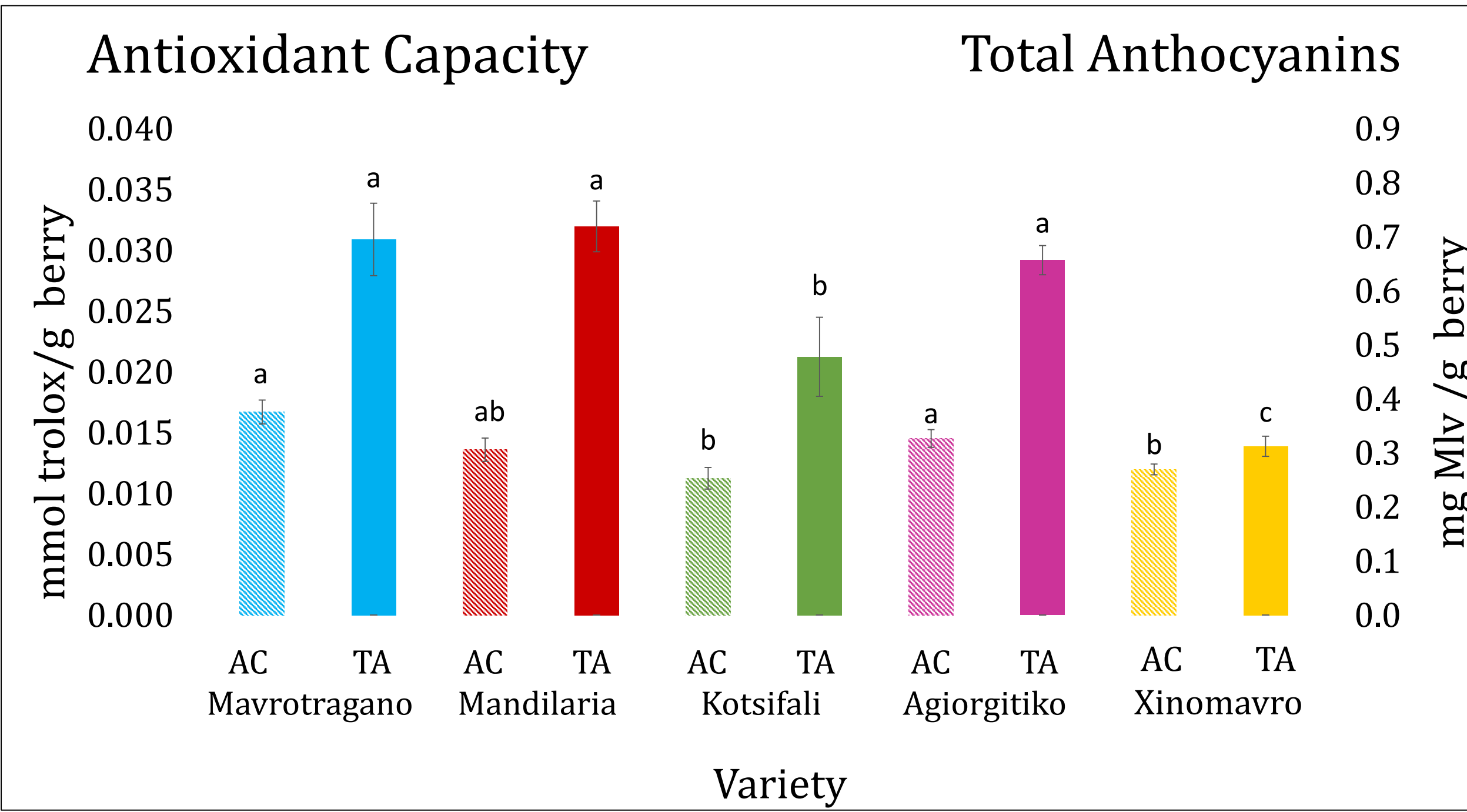


Figure 2. Antioxidant Capacity (AC, mmol trolox/g berry) and Total Anthocyanins (TA, mg Mlv/g berry) of five red winegrape varieties

Conclusions

In conclusion, anthocyanins from skin extracts showed different antioxidant activity, which it was not related to the concentration of total anthocyanins. The concentration of total anthocyanins for the three of the five varieties it was determined at the same level, however anthocyanic profiles showed differences, which can be used in cultivar differentiation. The study presented herein provided valuable data with regard to anthocyanin composition of several technologically important wine grape varieties.

References

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2. Kyraleou, M., Kallithraka, S., N., T., Teissedre, P., Y., K., & Koundouras, S. (2017). Molecules, 22(9), 1453.
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Acknowledgments

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