PHENOLIC COMPOSITION OF XINOMAVRO (*VITIS VINIFRA L.CV.*) GRAPES FROM DIFFERENT REGIONS OF GREECE

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Abstract

Context and purpose of the study – Phenolic compounds are located in skins and seeds and are responsible for important sensory and quality attributes of red grapes and wines, such as astringency, bitterness and colour. However, little is known regarding Greek varieties. The aim of this study is to evaluate the grape phenolic content and to present data that characterize the red grape variety Xinomavro (*Vitis Vinifera L. cv*.) from different wine regions of Greece.

Material and methods - In this study berry attributes, skin and seed content of phenolic compounds of 18 grape samples from four different regions in Greece, namely Naoussa, Amyntaino, Goumenissa and Rapsani were analyzed. Skins and seeds were removed from berries and different solvents were used in them for the extraction of anthocyanins and tannins. For tannin estimation, the protein precipitation assay using bovine serum albumin was employed. Anthocyanins were determined in skins by High-performance liquid chromatography (HPLC).

Results – According to the results, significant differences were observed in berry weight among the different regions, however the distribution of berry components in mature berries, % skin per berry and % seed per berry weight ratio, had no difference between the samples. The contribution of skins and seeds in berry were 8.1% and 2.6%, respectively. The higher content of total tannins and total anthocyanins in berries were observed in grapes from Amyntaio region. Grapes from Naoussa region had the lower concentrations of skin tannins and total anthocyanins. Finally, the lower concentrations of seed tannins were determined in Goumenissa grapes.

Keywords: Grapes, Anthocyanins, Tannins, HPLC, Greek winegrape varieties

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Phenolic Composition of Xinomavro (*Vitis Vinifera* L.cv) grapes from different regions of Greece

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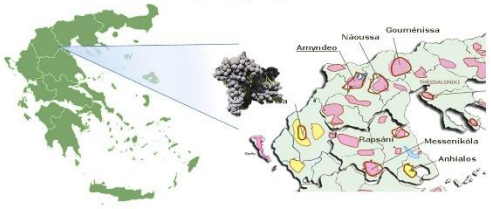
Introduction

Phenolic compounds, as anthocyanins and tannins, are of great technological interest since they have significant impact on astringency, bitterness, color and ageing potential in wines. They are located in grape skins and seeds and extract in the must during vinification. The composition of grape phenolic compounds is characteristic of each variety [1,2,3], and the profile of anthocyanins has been previously used to classify grape cultivars [2,3]. However, little is known regarding Greek varieties. The aim of this study is to evaluate the grape phenolic content and to present data that characterize the red grape variety Xinomavro (Vitis Vinifera L. cv.) from different wine regions of Greece. Xinomavro is the main and noblest indigenous red grape variety of northern Greece and one of the four flagship Greek grape varieties. It is grown in Central and West Macedonia, in North Greece and PDO areas are Naoussa, Amyndeon, Rapsani and Goumenissa.

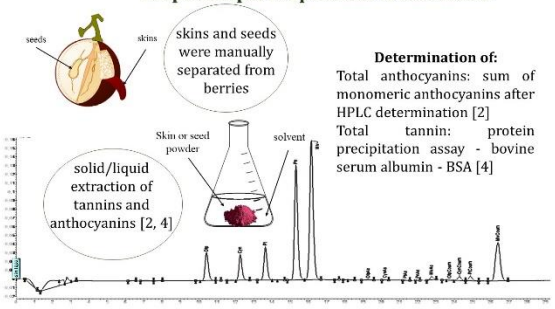
Experimental Design & Methods

Vineyards/Regions



Winegrape Variety: *Vitis vinifera* L. cv. Xinomavro
Location: Northern Greece
Regions: Naoussa, Amyndeon, Rapsani and Goumenissa
18 Samples at Harvest Day(22-23 Brix)

Grape Sample Preparation & Extraction



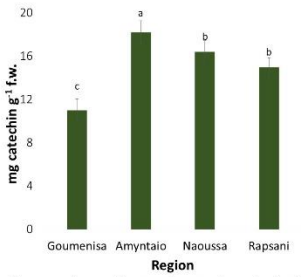
Determination of:
Total anthocyanins: sum of monomeric anthocyanins after HPLC determination [2]
Total tannin: protein precipitation assay - bovine serum albumin - BSA [4]

Results

Region	berry weigh	%seeds/berry	%skins/berry
Goumenisa	1.73 ± 0.02b	2.6 ± 0.2 a	8.4 ± 0.9a
Amyntaio	1.67 ± 0.08b	2.9 ± 0.1 a	7.8 ± 0.5 a
Naoussa	1.98 ± 0.06ab	2.6 ± 0.1 a	8.6 ± 0.5 a
Rapsani	2.22 ± 0.11a	2.3 ± 0.2 a	7.5 ± 0.9a

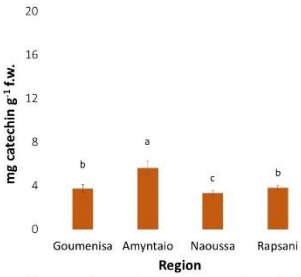
- Grapes from Rapsani and Naousa had the biggest berries
- No significant differences were observed on the distribution of berry components in mature berries

Fig. 1: Seed Total Tannins



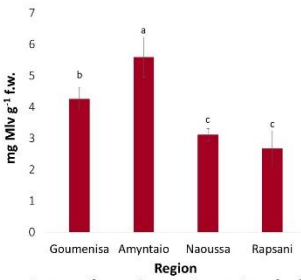
- Grapes from Amyntaio region had the higher content of total tannins in seeds.
- Grapes from Goumenissa region had the lower content of total tannins in seeds.
- Grapes from Naoussa and Rapsani regions had similar concentrations of seeds tannins.

Fig. 2: Skin Total Tannins



- Grapes from Amyntaio region had the higher content of total tannins in skins.
- Grapes from Naoussa region had the lower concentrations of total tannins in skins.
- Grapes from Naoussa and Rapsani regions had similar concentrations of skin tannins.

Fig. 3: Skin Total Anthocyanins



- Grapes from Amyntaio region had the higher content of total anthocyanins.
- Grapes from Naoussa and Rapsani regions had the lower content of total anthocyanins.

Conclusions

Grapes of Xinomavro variety from different regions were characterized by different phenolic composition. The region of Xinomavro cultivation is an important factor that could affect the grape composition and the sensory properties of the corresponding wines. The higher content of total tannins and total anthocyanins in berries were observed in grapes from Amyntaio region. Grapes from Naoussa region had the lower concentrations of skin tannins and total anthocyanins, the lower concentration of seed tannins was determined in Goumenissa grapes.

Acknowledgements

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