

# DETERMINATION OF TOTAL PHENOLIC CONTENT, ANTIMICROBIAL AND ANTIOXIDANT ACTIVITY OF GRAPE SKIN EXTRACTS FROM TEN ARMENIAN GRAPE VARIETIES FROM ARARAT VALLEY AND SYUNIQ REGION

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## Introduction

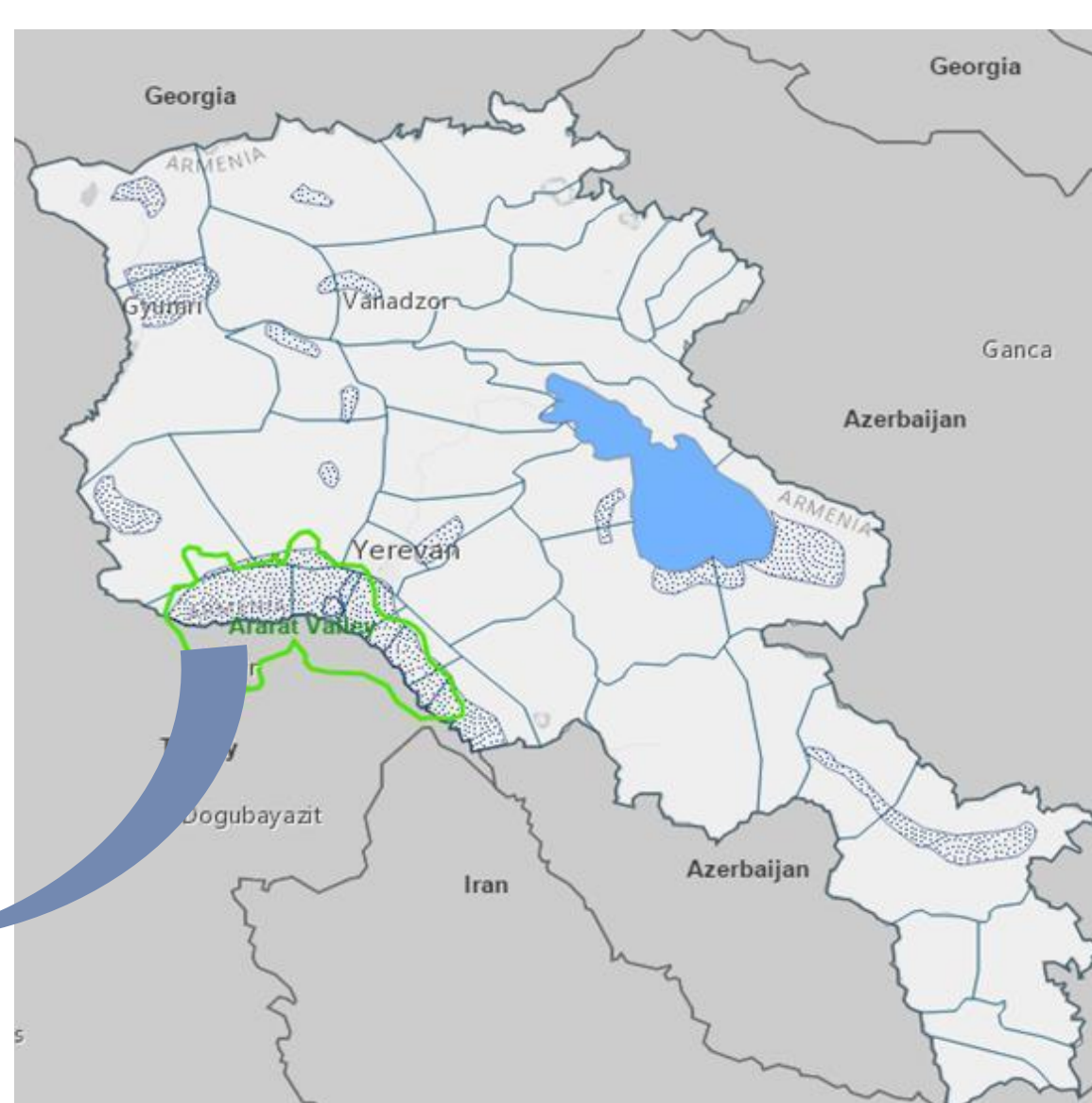
The grapevine (*Vitis vinifera* L.) is a phenol-rich plant, and the phenolics are mainly distributed in the skin and seed of grape which show a great ability of antioxidant, antibacterial and antifungal activities. Armenia is characterized by a distinctive habitat and a very long tradition of grape growing and high-quality winemaking. Therefore, the aim of this study was to evaluate the total phenolic compounds, antibacterial and antioxidant properties of ten autochthonous Armenian varieties, with different genetic background and geographic origin.

## Materials and methods

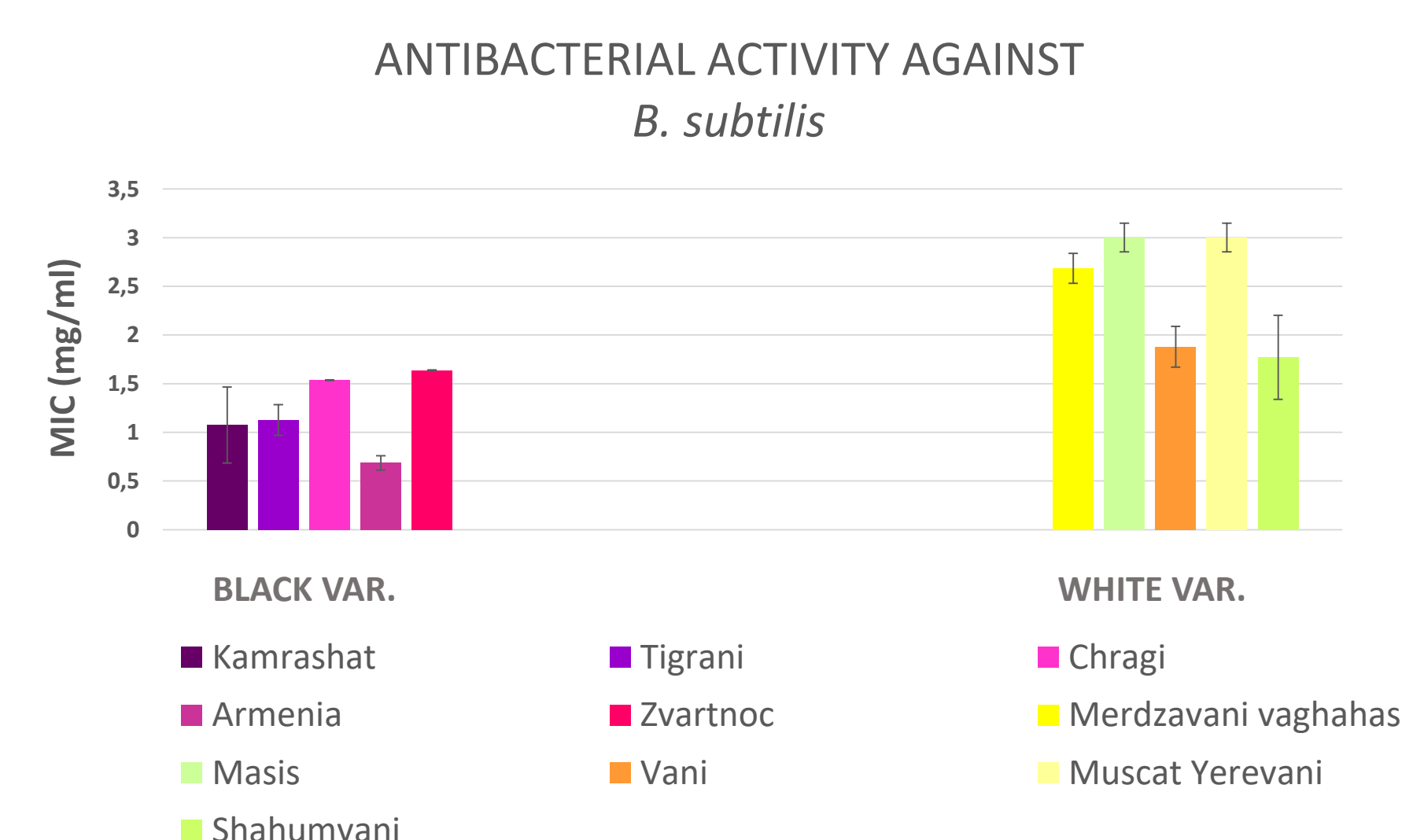
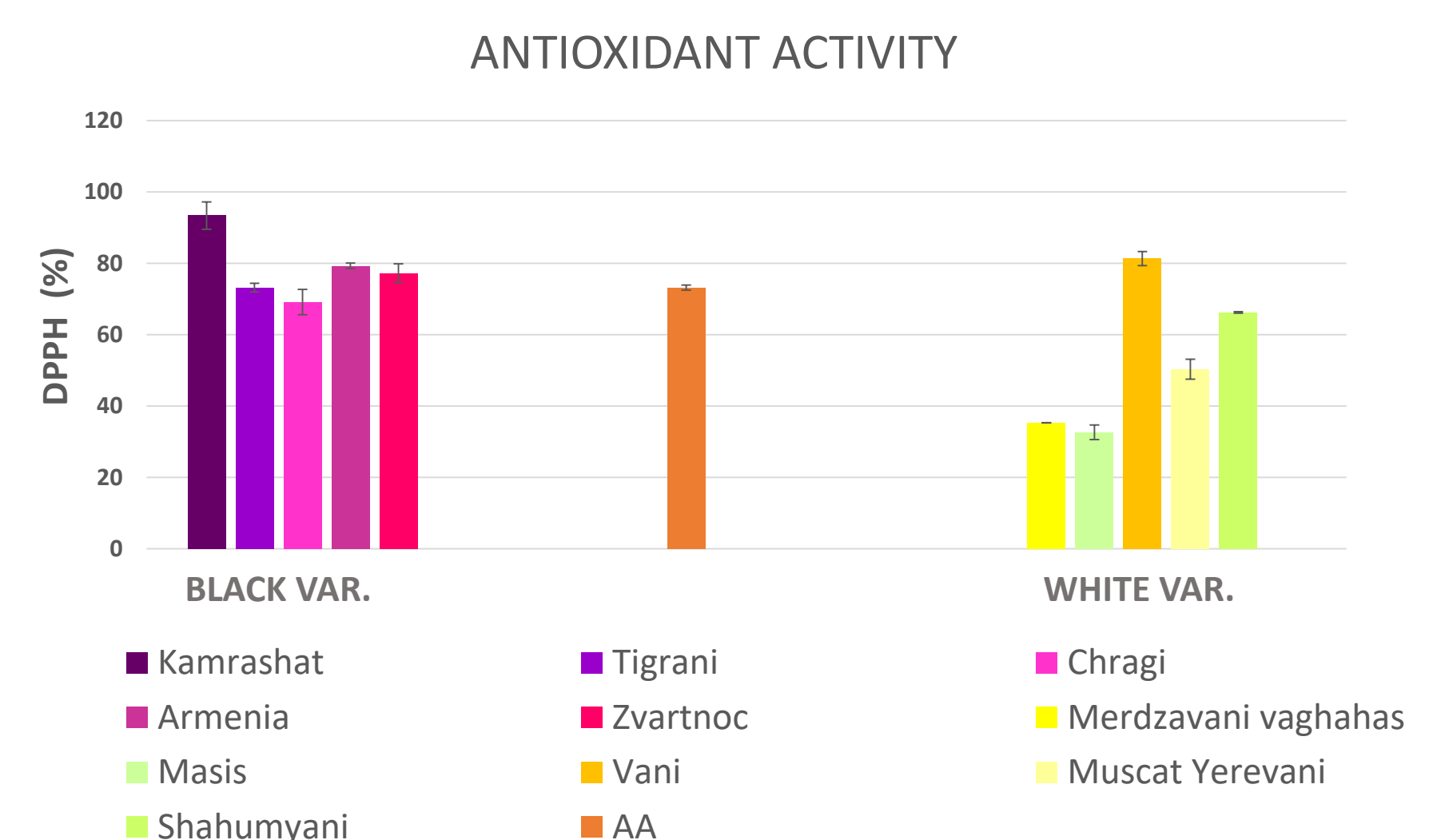
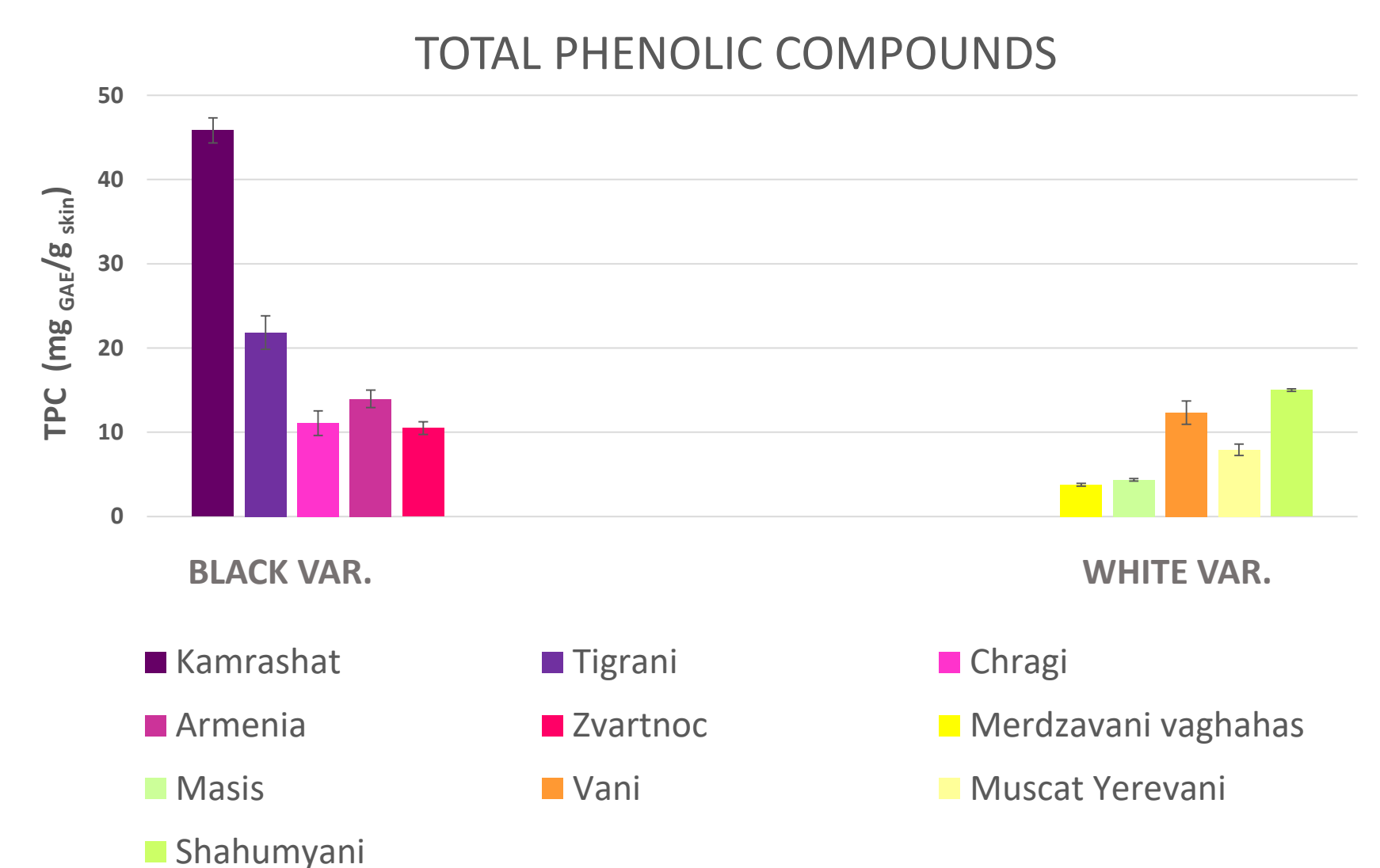
This study was performed on skin extracts of ten different grape varieties grown in Armenia. Grape skin extraction was performed according to the method described by Rustioni et al. 2014. Qualitative spectrophotometric Folin - Ciocalteu method was used to determine the total phenolic compounds (TPC) and the modified DPPH method was used to test the antioxidant activity. The antibacterial activity of grape skin extracts against four pathogenic bacteria (*Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli* and *Pseudomonas aeruginosa*) was evaluated by the method of minimum inhibitory concentration (MIC).

Species and pedigree of Armenian grape varieties

Grape varieties	Pedigree	Parents	Colour
<b>Karmrashat</b>	<i>V. vinifera</i>	Muscat rouge de Madere x Nerkeni	black
<b>Merdzavan</b>	<i>V. vinifera</i>	C-1262 x Karmrahut	black
<b>Tigrani</b>	<i>V. vinifera</i>	Saperavi x Sev Areni	black
<b>Chragi</b>	<i>V. vinifera</i>	autochthonous	black
<b>Armenia</b>	<i>V. vinifera</i>	Itsaptuk x Sev Sateni	dark blue
<b>Zvartnoc</b>	<i>V. vinifera</i>	Karmir kakhani x Parkent	rouge
<b>Masis</b>	<i>V. vinifera</i>	Mskhali x Spitak Sateni	greenish-yellow
<b>Vani</b>	<i>V. vinifera</i>	Nimrang x Alphonse Lavallee	yellowish-amber
<b>Muscat Yerevanyan</b>	<i>V. vinifera</i>	(Madeleine Angevine x Shasla Muscatnaya) x Rizmat	whitish-yellow
<b>Shahumyani</b>	<i>V. vinifera</i>	Itsaptuk O.P.	green-yellowish



## Results



## Conclusions

- black varieties of Armenian grapes show higher contents of total skin phenolic compounds
- the highest total phenol content (45.84 mg<sub>GAE</sub>/g<sub>skin</sub>) and the highest antioxidant activity (93.37%) were recorded in the black variety "Karmrashat"
- positive correlations between TPC and total antioxidant activity ( $r=0.711$ ;  $p<0.05$ ) confirm that phenolic groups are highly responsible for the antioxidant activity of selected grape skins extracts
- the strongest antibacterial activity of „Armenia” variety grape extracts in relation to all tested varieties, especially against gram - positive *B. subtilis* and gram - negative *E. coli* was confirmed