BIOLOGICAL POTENTIAL OF ELDERBERRY WINE

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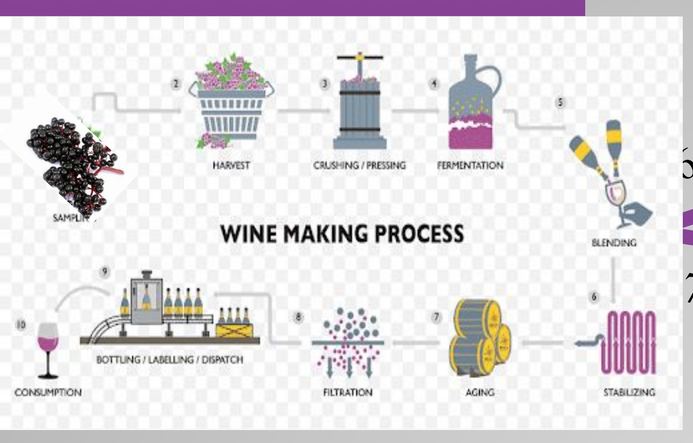
INTRODUCTION

Sambucus nigra L., commonly known as the European elder, belongs to the family Adoxaceae. This plant species has a long tradition in folk medicine throughout Europe. Mature elder berries are used in the form of herbal tea, syrup, or juice against colds, as a laxative, diaphoretic, diuretic, and analgesic. Elderberry is present in various food products as a dietary supplement. Market and consumer interest in elderberry-based products are growing, so numerous research is based on creating new products that are not available on the market yet. The aim of this study was to obtain elderberry wines as new potential food products with added value, and analyzed their biological potential.

EXPERIMENTAL PART



60 °C during 10 minutes

70 °C during 5 minutes

Analyzes of wines

RESULTS

Table 1. Content of total phenolics compounds of elderberry wines

Wines	Total phenolic content (mg GAE/mL wine)[a]	Total flavonoid content (mg RE/mL wine)[b]	Total anthocyanins content (mg CGE/mL wine)[c]	Total tannins content (mg CA/mL wine)[d]
60 °C, 10 min	4.46±0.12	0.24±0.02	0.63±0.05	3.18±0.21
70 °C, 5 min	5.12±0.05	0.42±0.02	0.76±0.05	3.84±0.23

[a] mg gallic acid equivalents per mL of wine
[b] mg rutin equivalents per mL of wine
[C] mg cyanidin-*3*-*O*-glucoside equivalent per mL of wine
[d] mg catechin equivalents per mL of wine
±3SD.

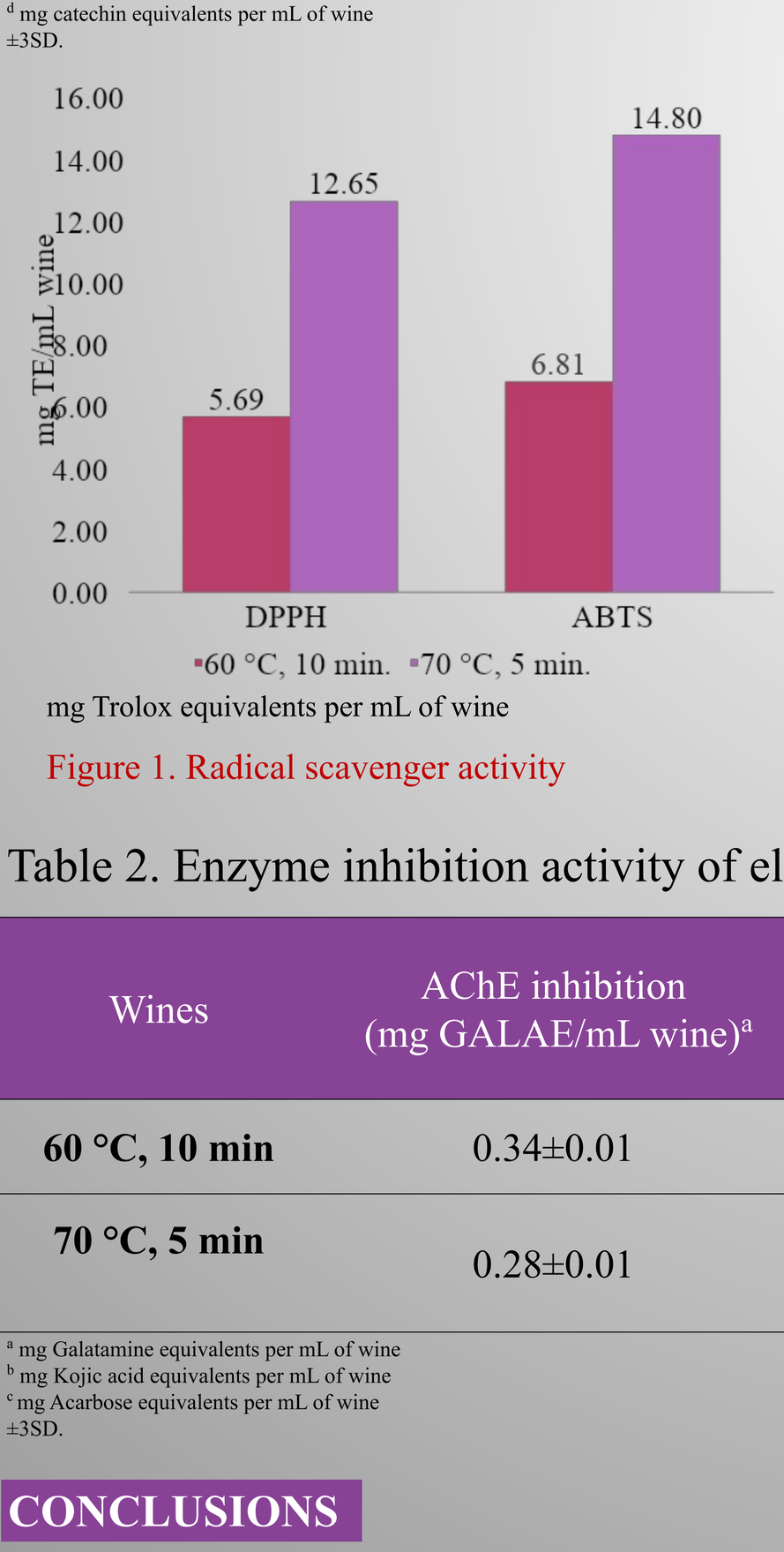


Figure 1. Radical scavenger activity

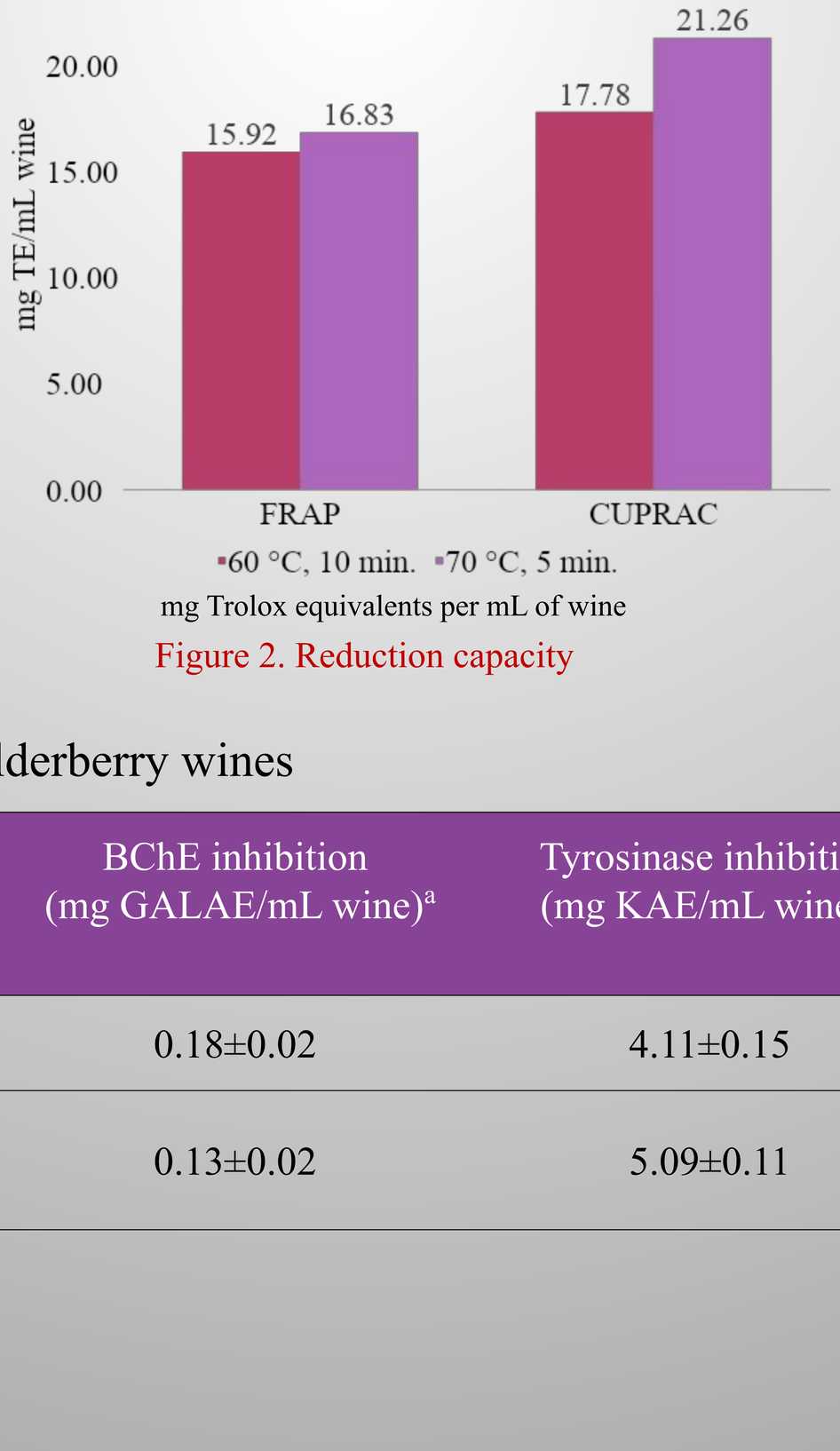


Figure 2. Reduction capacity

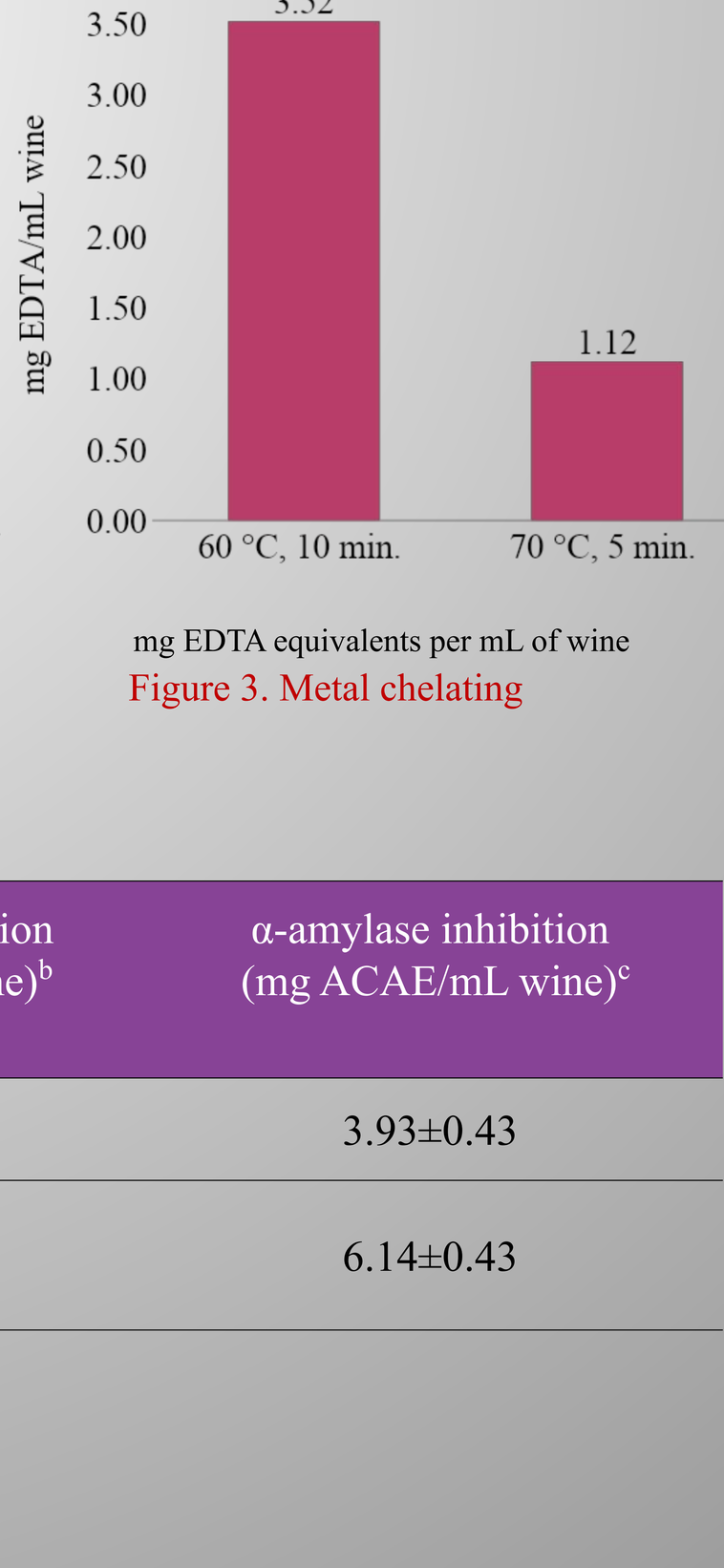


Figure 3. Metal chelating

Table 2. Enzyme inhibition activity of elderberry wines

Wines	AChE inhibition (mg GALAE/mL wine)[a]	BChE inhibition (mg GALAE/mL wine)[a]	Tyrosinase inhibition (mg KAE/mL wine)[b]	α-amylase inhibition (mg ACAE/mL wine)[c]
60 °C, 10 min	0.34±0.01	0.18±0.02	4.11±0.15	3.93±0.43
70 °C, 5 min	0.28±0.01	0.13±0.02	5.09±0.11	6.14±0.43

[a] mg Galatamine equivalents per mL of wine
[b] mg Kojic acid equivalents per mL of wine
[c] mg Acarbose equivalents per mL of wine
±3SD.

CONCLUSIONS

Based on the conducted research, the obtained results indicate an exceptional biological potential of elderberry wine. Temperature treatment of 70°C, 5 minutes was more suitable for the production of elderberry wine because temperature 70 °C facilitates the isolation of secondary metabolites from fruits, which explains the better biological activity of this wine, and a time period of 5 minutes issufficient to affect the degradation of cyanogenic glycosides but does not cause disturbance of the chemical structure of phenolic compounds.