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## Introduction

Roses belong to the family Rosaceae, genus *Rosa*, which is made of about 200 species and 30 000 cultivars. The most important products of roses are essential oil, rose water, rose concrete, and rose concentrate. Due to their specific aroma, rose petals have been used for centuries as food in the production of jams, teas, wine, cakes, flavour extracts, and candies. Additionally, they are rich in biologically active compounds that contribute to human health.<sup>1</sup>

The aim of this study was to evaluate the potential use of new edible rose genotypes as a source of health-promoting compounds and functional food.

## Materials and Methods

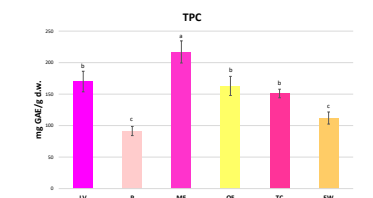
In this study, flowers of 6 new genotypes of *Rosa hybrida*, classified as edible roses due to their specific aroma, were harvested from the experimental fields of Pheno Geno Roses company near Temerin, Vojvodina. Petals were macerated with 70% MeOH and extracts were chemically characterized by determining total phenolic (TPC), flavonoid (TFC) and monomeric anthocyanin contents (TAC) as well as LC-MS/MS quantitative analysis. Biological activity was evaluated by DPPH, FRAP and acetylcholine esterase inhibition assays.<sup>2-4</sup>



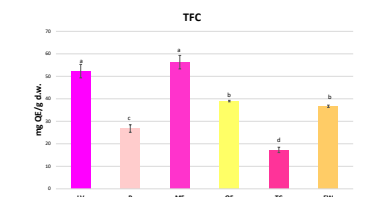
## Results

Table 1. Results of quantitative analysis of selected compounds by LC-MS-MS ( $\mu\text{g/g d.w.}$ )

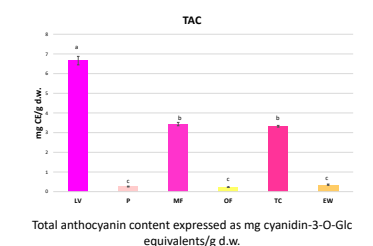
Compound	LV	P	MF	OF	TC	EW
Protocatechuic acid	44.8	3.26	33.0	2.17	11.1	8.69
p-Coumaric acid	1.15	2.98	0.17	1.04	0.33	0.87
Galic acid	27.3	24.3	22.5	23.1	18.9	30.6
Quinic acid	19037	21722	26963	36142	36833	17513
Chlorogenic acid	7.34	2.19	1.11	0.65	2.18	1.60
Kaempferol	9.88	15.3	9.60	23.9	18.1	18.1
Catechin	255	155	113	75.7	100	55.5
Quercetin	58.8	13.1	23.8	37.8	6.89	18.4
Kaempferol-3-O-Glc	60.9	147	76.2	96.2	74.1	193.6
Quercitrin	6537	1843	7584	3974	467	1952
Quercetin-3-O-Glc + Gal	25326	25326	11403	13231	758	8545
Rutin	749	390	6241	723	179	665



Total phenolic content expressed as mg gallic acid equivalents/g d.w.



Total flavonoid content expressed as mg quercetin equivalents/g d.w.

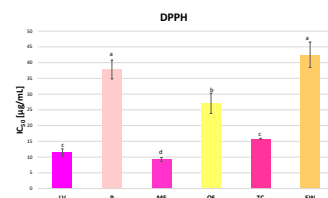


## Conclusion

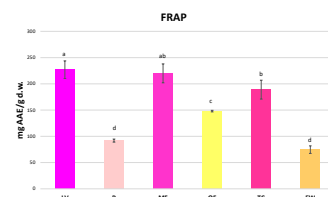
- Based on total phenolic content these new rose genotypes are a good source of phenolics
- The highest content of total phenolics is determined in rose MF, followed by LV, TC and CF
- The highest content of total flavonoids was detected in roses LV and MF
- The highest amount of total monomeric anthocyanins was determined in LV, followed by MF and TC, this result is according to expectations since these are pink-colored roses
- LC-MS-MS results show that the major components of rose extracts are quinic acid, kaempferol-3-O-glucoside, quercitrin, quercetin-3-O-galactoside and glucoside, and rutin
- Based on the FRAP assay highest antioxidant potential showed roses LV and MF
- Based on the ability to neutralize DPPH· radical highest antioxidant potential was determined in rose EW, followed by P and OF
- Based on the ability to inhibit acetylcholine esterase, these roses have moderate neuroprotective activity, with best activity detected in EW
- Based on the obtained results, the new genotypes of edible roses investigated in this study can be considered as functional food due to the high level of bioactive compounds with health-promoting properties

## References

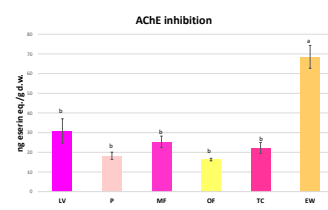
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Neutralization of DPPH radical expressed as IC50 ( $\mu\text{g/mL}$ ).



Total antioxidant power expressed as mg ascorbic acid equivalents/g d.w.



Acetylcholine esterase inhibition expressed as ng eserine equivalents/g d.w.

## Acknowledgments

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