

Influence of conventional and innovative extraction techniques on bioactive properties of ground ivy (*Glechoma hederacea* L.)



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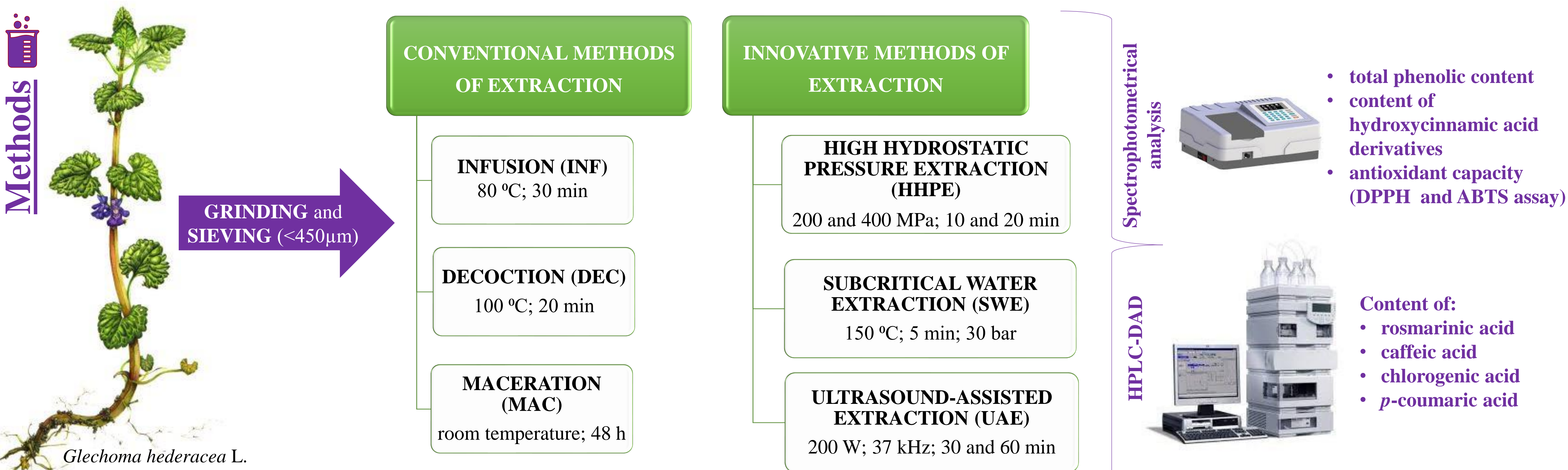
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Introduction

Glechoma hederacea L., known as ground ivy, is a perennial plant commonly grown in Europe, Asia and America. Plant was first named 1753. in the book „*Species Plantarum*” by Carl Linné [2]. Although it has been used for generations in folk medicine [1], the linkage between its bioactive content and health benefits still requires scientific ground. Therefore, the aim of this study was to investigate the bioactive content of *Glechoma hederacea* L. by applying different techniques of extraction.

According to approximately 80% of the population still relies on the use of herbal medicine as primary health care and natural products and/or natural product structures still have a significant role in the drug discovery and development process.

Methods



Results

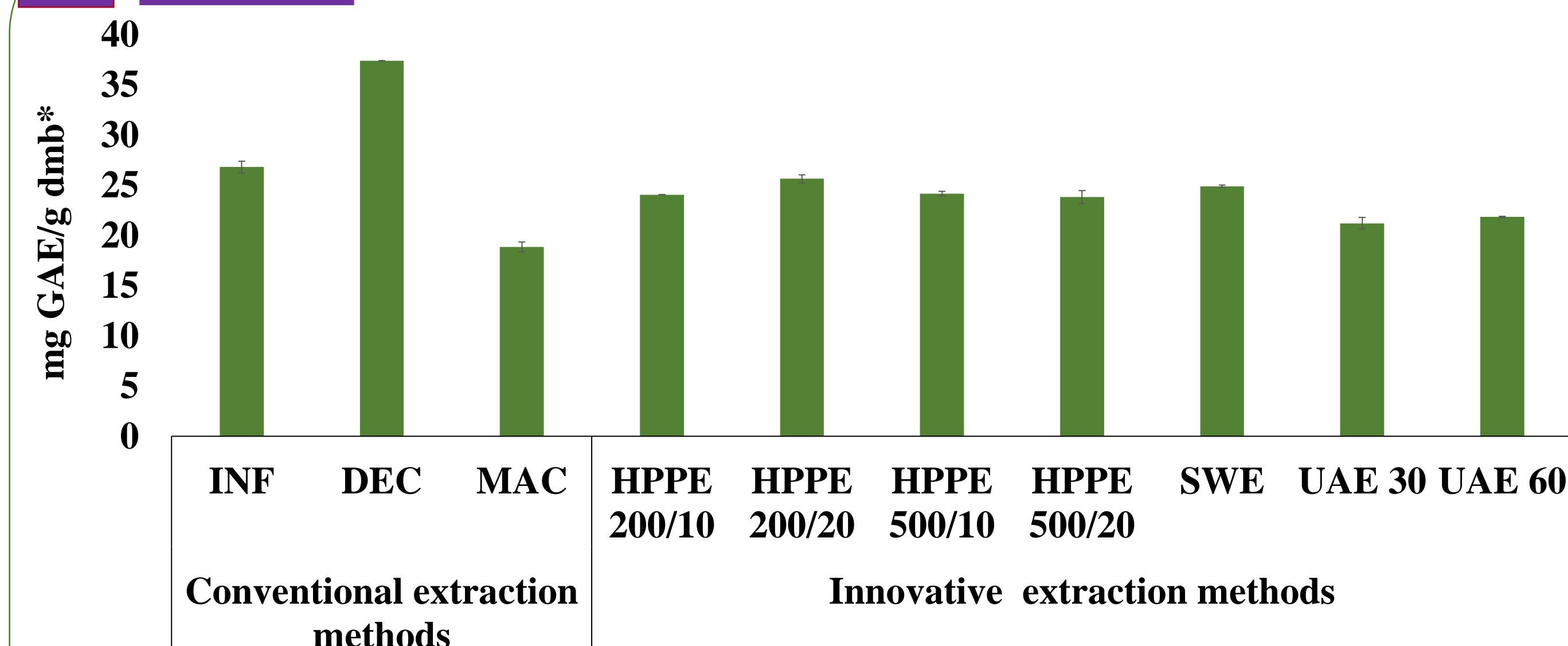


Figure 1. Total phenolic content in obtained extracts

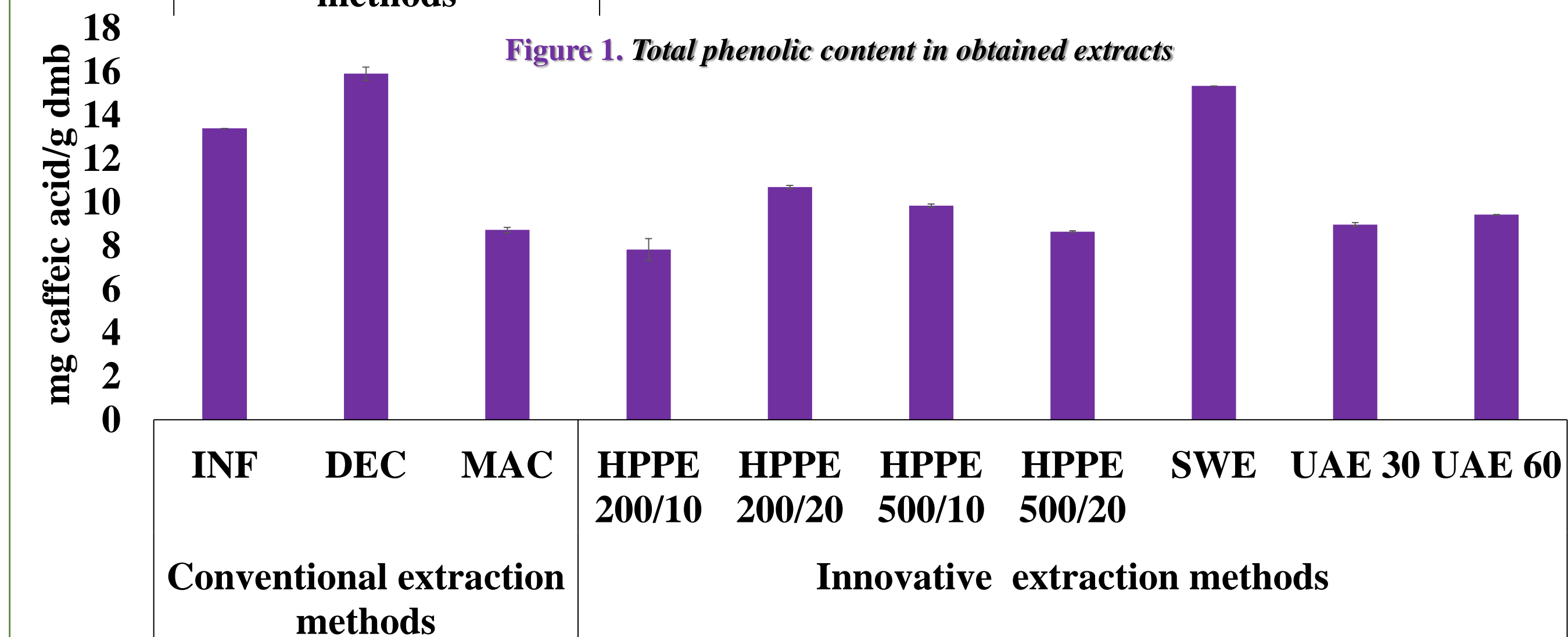


Figure 2. Content of hydroxycinnamic acid derivatives in obtained extracts

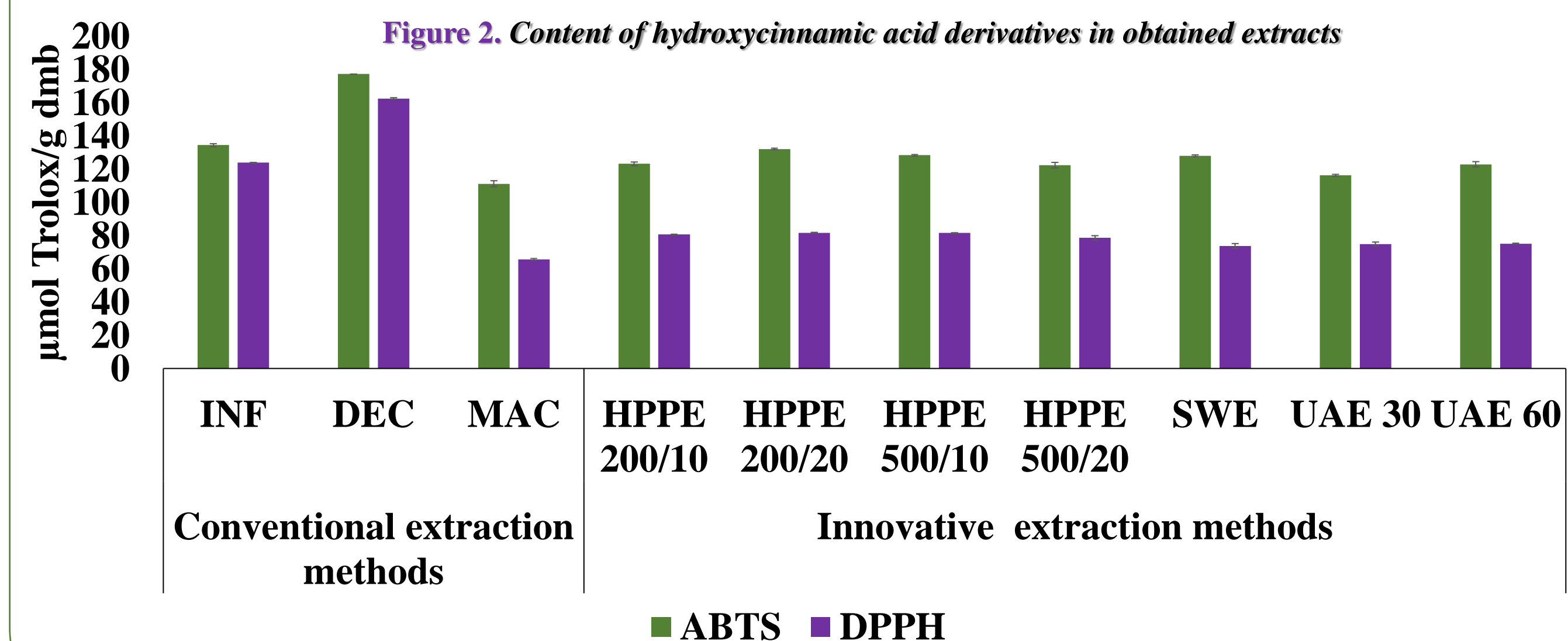


Figure 3. Antioxidant capacity of obtained extracts

Table 1. Content of individual phenolic acids (μg/g dmb)

SAMPLE	Rosmarinic acid	Caffeic acid	Chlorogenic acid	<i>p</i> -coumaric acid
INF	1200.9	189.8	411.7	/
DEC	2001.0	198.6	512.1	/
MAC	20.1	15.8	27.4	46.9
SWE	144.6	299.5	183.5	46.5
U30	483.7	374.0	59.3	103.6
U60	499.5	393.7	58.8	97.6
HPPE 200/10	687.7	404.9	79.4	112.1
HPPE 200/20	652.9	479.8	99.3	106.3
HPPE 400/10	507.1	377.8	62.4	86.8
HPPE 400/20	506.8	381.7	57.4	77.5

*dmb = dry matter basis of the sample

*GAE = gallic acid equivalents

Conclusions

- Conventional extraction method – decoction resulted in the extract with the highest total phenolic (37.39 mg GAE/g dmb), hydroxycinnamic acid derivatives content (15.9 mg caffeic acid/g dmb), antioxidant capacity (177.24 and 162.53 μmol Trolox/g dmb) and the highest content of rosmarinic (2001.0 μg/g dmb) and chlorogenic (512.1 μg/g dmb) acid.
- High hydrostatic pressure extraction under pressure level of 200 MPa during 20 and 10 min yielded the extracts with the highest content of caffeic (479.8 μg/g dmb) and *p*-coumaric (112.1 μg/g dmb) acid, respectively.
- Ground ivy (*Glechoma hederacea* L.) proved to be a valuable source of natural bioactive compounds, especially phenolic acids.

Acknowledgement

This study was conducted in the framework of research project "Formulating encapsulated systems of bioactive ingredients from traditional plants: mountain germander and ground ivy for the development of innovative functional food products., (IP-2019-045879) funded by the Croatian Science Foundation.

References

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- [2] L.W. Mitich, *Weed Technol* 8, 413