

Phenolic profile and antioxidant potential of by-products from *Allium* species

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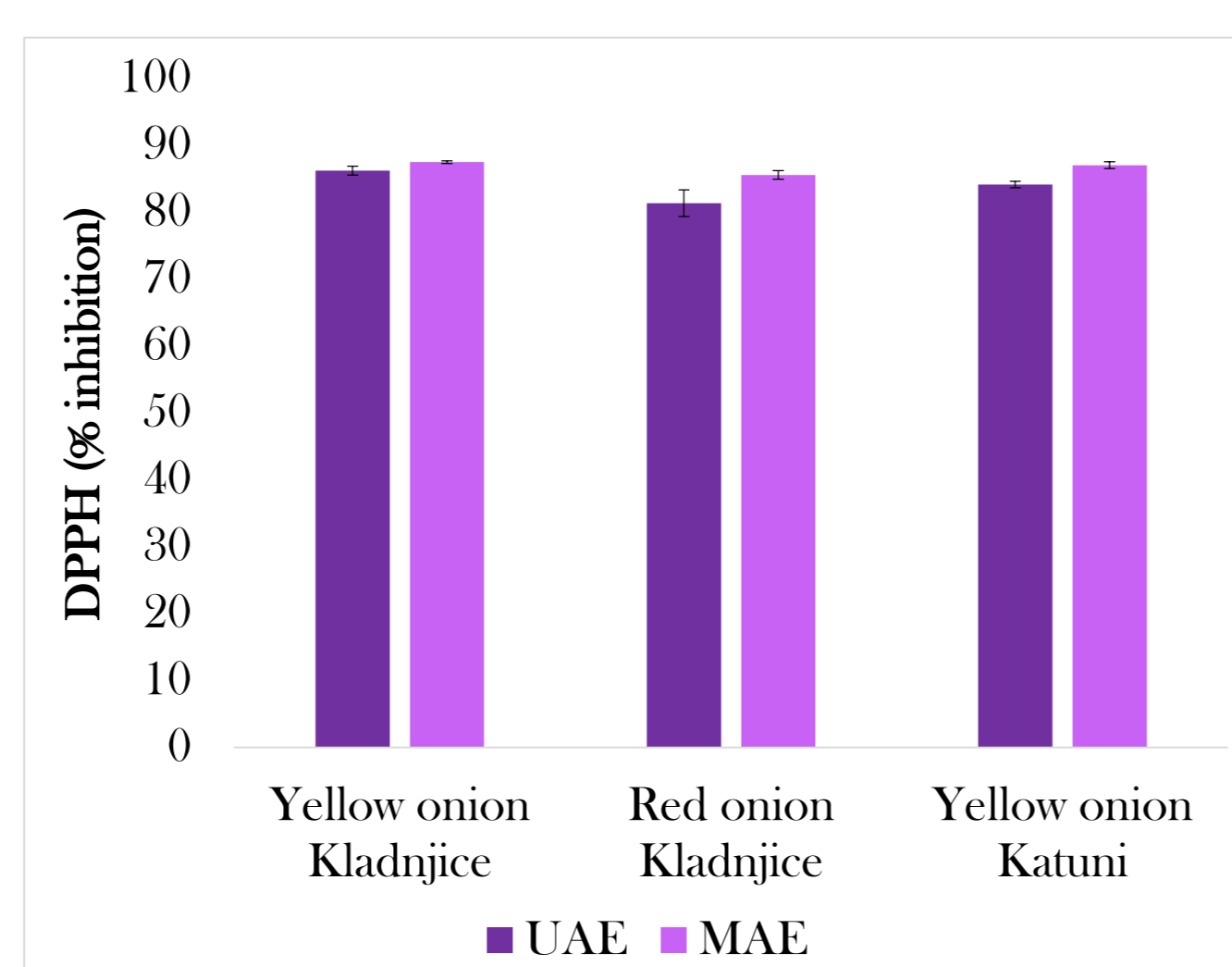
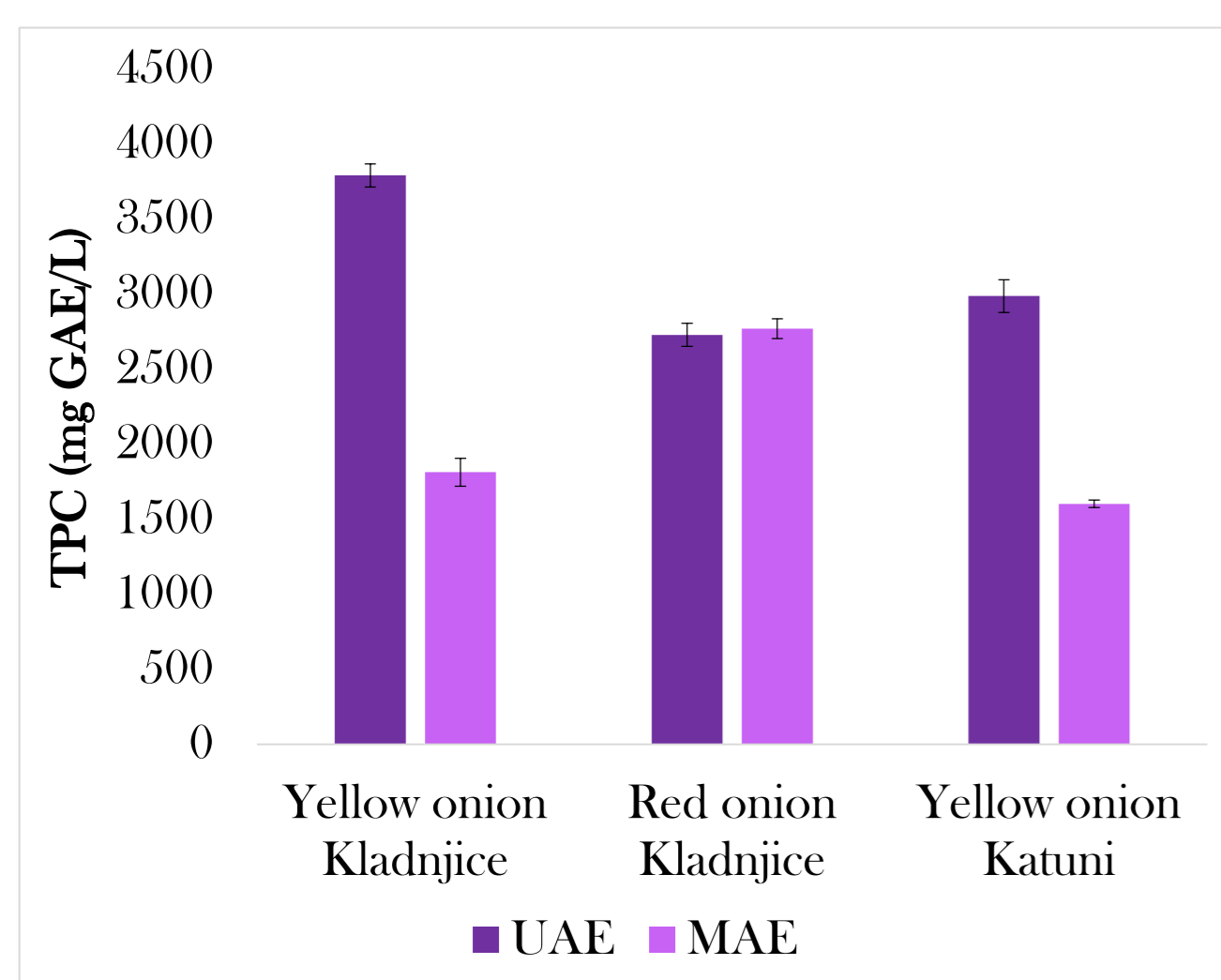
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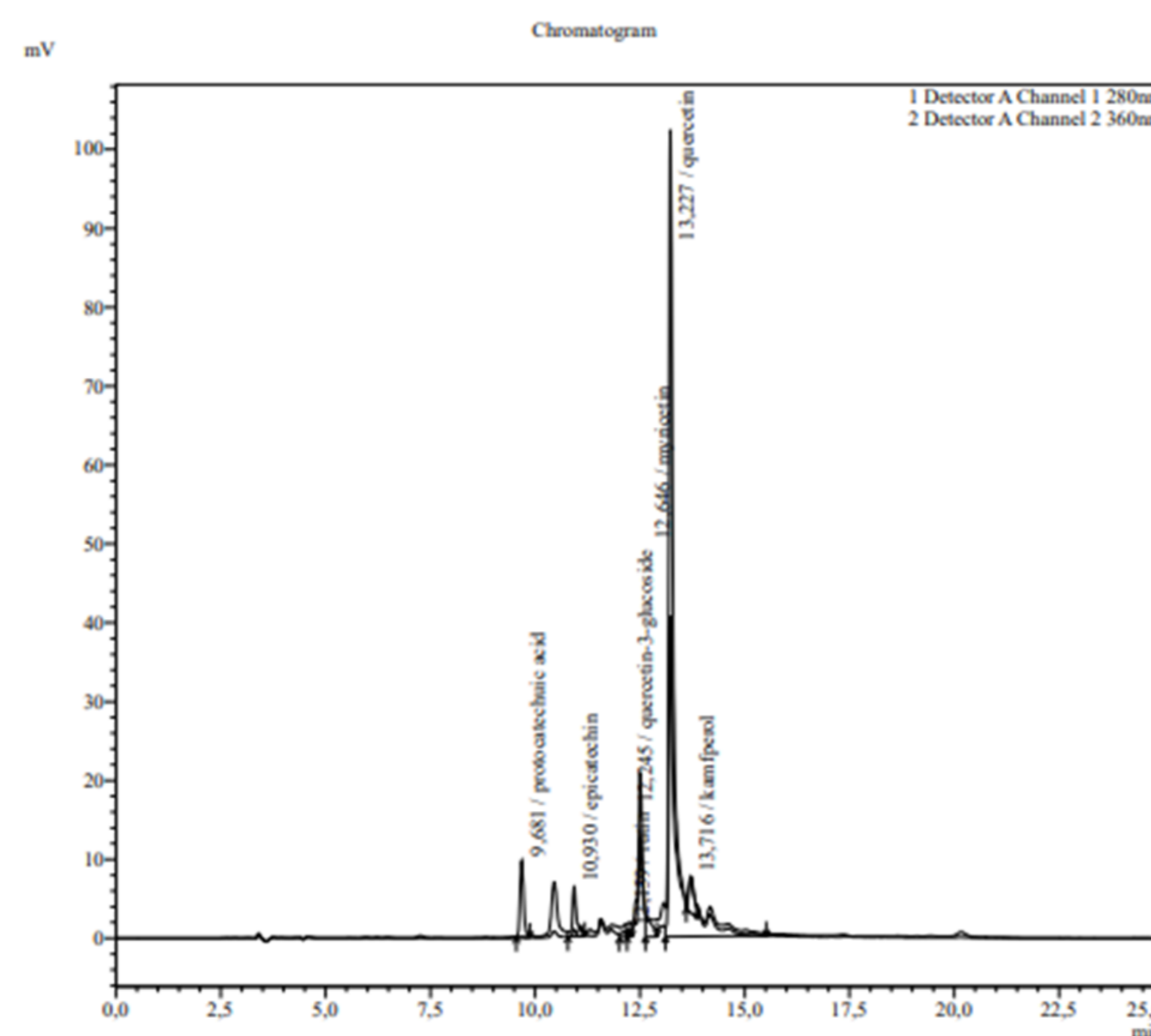
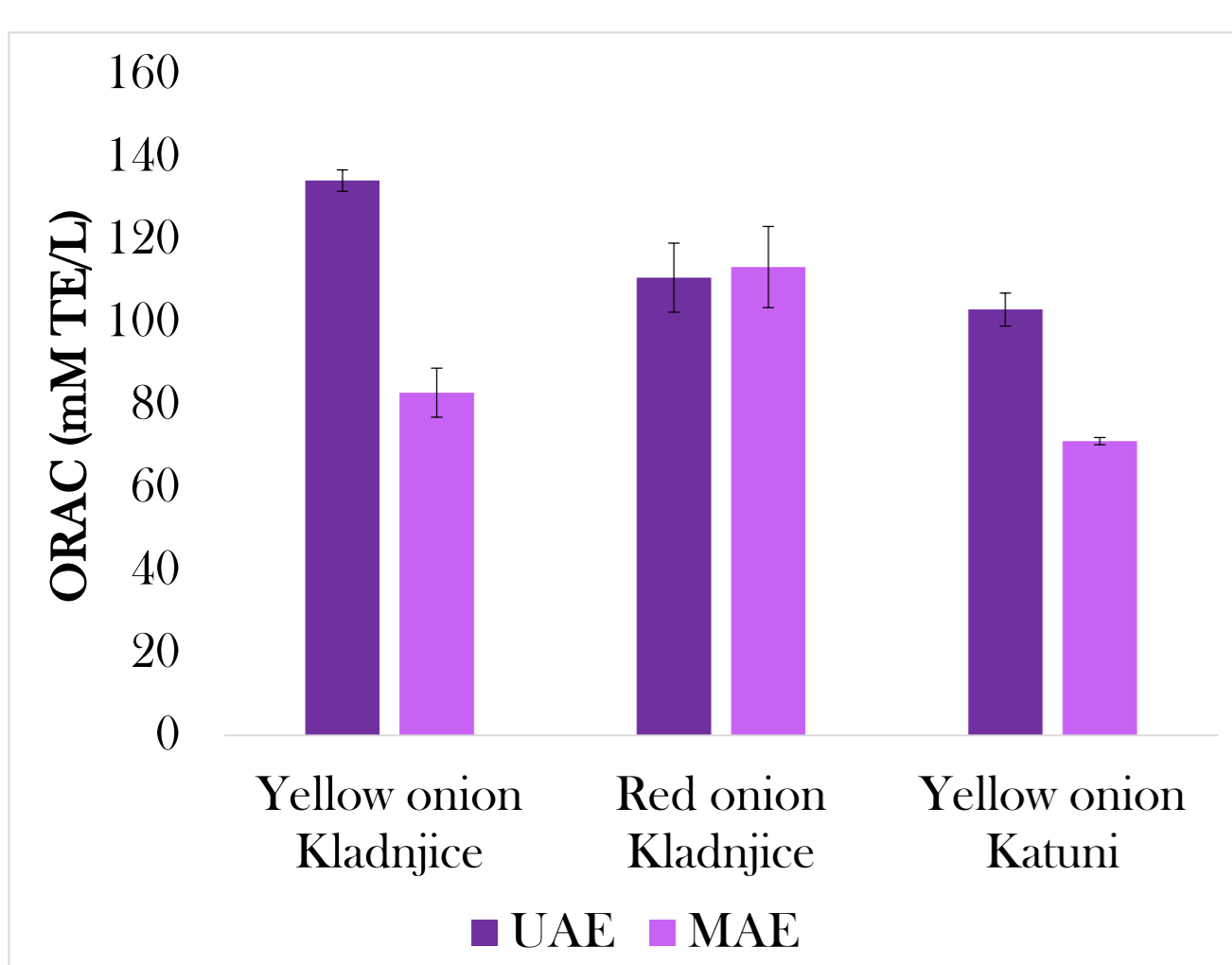
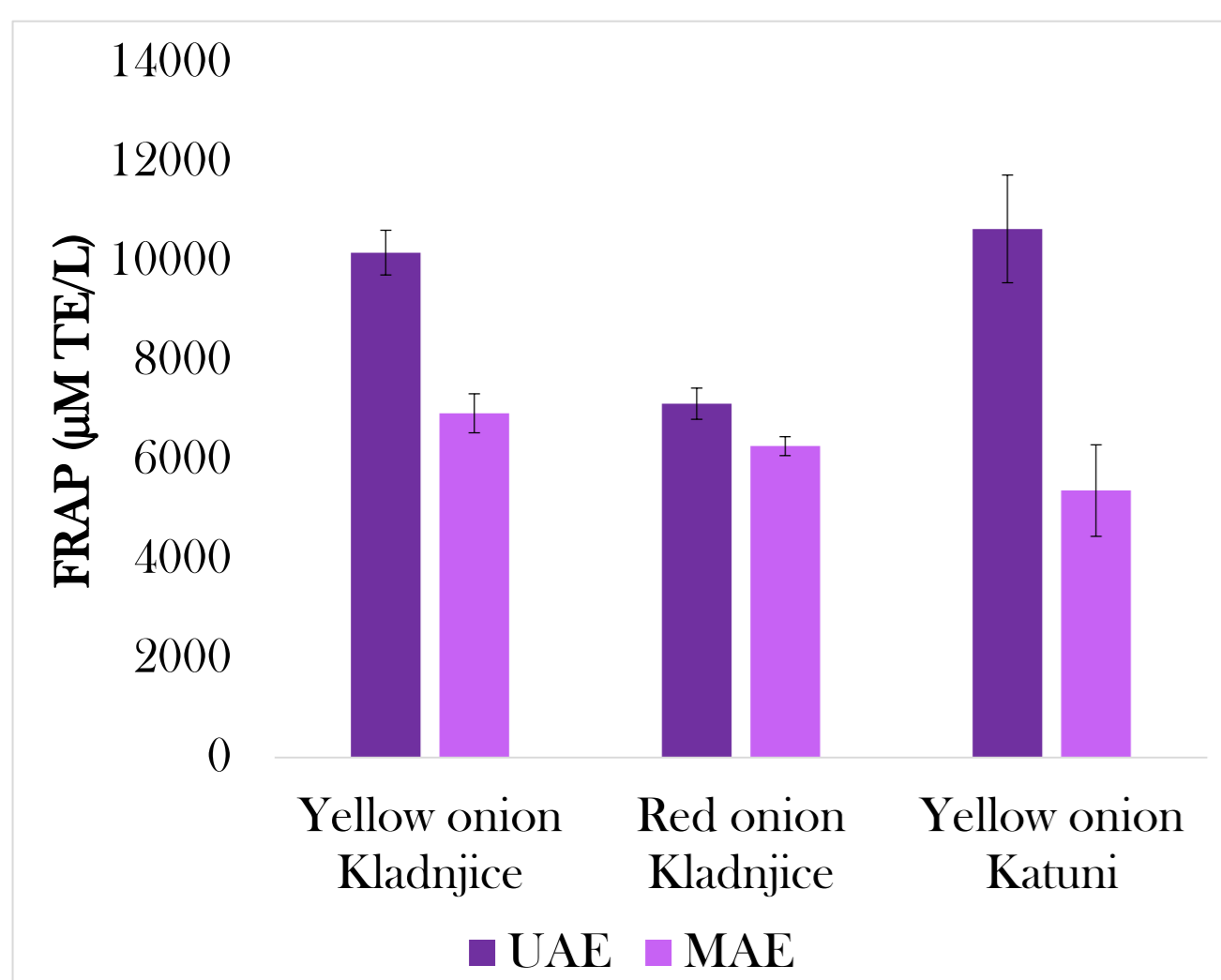
INTRODUCTION

Onion peels, often discarded as waste, may hold untapped bioactive potential due to their rich content of bioactive compounds. This study aimed to investigate the phenolic profile and antioxidant potential of red and yellow onion peels using various assays.

RESULTS



GAE - gallic acid equivalent; TE - trolox equivalent.



METHODS

Onion peels were collected and shade-dried. Two yellow onion peels samples were collected, one from Kladnjice and other from Katuni in Croatia, and one red onion peels sample from Kladnjice.

Peels were extracted in hydroethanolic solvent (ratio 1:1) using two different extraction methods, ultrasound-assisted extraction (UAE) for 1 hour at 40 kHz and 60 °C, and microwave-assisted extraction (MAE) for 5 minutes at 600W.

The total phenolic content (TPC) was determined using the Folin-Ciocalteu method and the phenolic profile using high-performance liquid chromatography (HPLC).

Antioxidant activity was evaluated using diphenyl-1-picrylhydrazyl (DPPH) radical scavenging, ferric reducing antioxidant power (FRAP) and oxygen radical absorbing capacity (ORAC) assays.



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- UAE yielded extracts with better TPC, FRAP and ORAC results, while there was no significant difference in DPPH results
- The results revealed quercetin, epicatechin and protocatechuic acid as dominant compounds in the onion peel extracts.

CONCLUSIONS

Onion peels exhibit notable antioxidant activity, suggesting their potential application as natural antioxidants in food and pharmaceutical industries. Further research into the different extraction methods and bioavailability of these antioxidants could contribute to the development of value-added products from onion peels, reducing waste and promoting sustainable utilization.

