

INTRODUCTION

The upcycling of agri-food by-products into high added-value products has been promoted in recent years. Solanaceae is one of the main plant families supplying important vegetable and staple food crops worldwide. Bell pepper (*Capsicum annuum* L.) and eggplant (*Solanum melongena* L.) (Fig. 1), are two good examples, and their agricultural production generates million tons of valueless crop remains (especially plant aerial parts) [1], whose insertion in the value chain needs to be promoted and investigated to ensure the efficient use and circularity of these natural resources. Moreover, while the fruits of these species are well characterized for their nutritional value [2], the residual biomass of these crops remain unexplored, and little is known about their composition in bioactive constituents.



Fig. 1 Bell pepper (left) and Eggplant (right) fruits and aerial parts.

METHODOLOGY



Bell pepper and eggplant aerial parts were supplied by local farmers from Bragança, Portugal. Hydroethanolic extracts of both plant materials were used for HPLC-DAD/ESI-MSⁿ analysis [3]. Compounds were identified using commercial standards and MS data from literature. The antioxidant activity was evaluated *in vitro* through two different biological assays: oxidative hemolysis inhibition assay (OxHLIA) and thiobarbituric acid reactive substances formation inhibition assay (TBARS). Antimicrobial effects were tested against several foodborne microorganisms by the serial microdilution methods [4].

RESULTS and DISCUSSION

Both extracts contain polyphenols such as phenolic acids and flavonoids. The bell pepper by-product extract showed a qualitative predominance of flavonoids. In turn, phenolic acids stood out as main compounds in the eggplant by-product extract (Fig. 2). Regarding antioxidant activity, OxHLIA assay showed that the bell pepper by-product extract presents a higher inhibition of oxidative hemolysis, and TBARS assay revealed that this extract produces also a greater inhibition of lipidic peroxidation. Extracts also showed antimicrobial activity against all the tested bacteria and fungi.

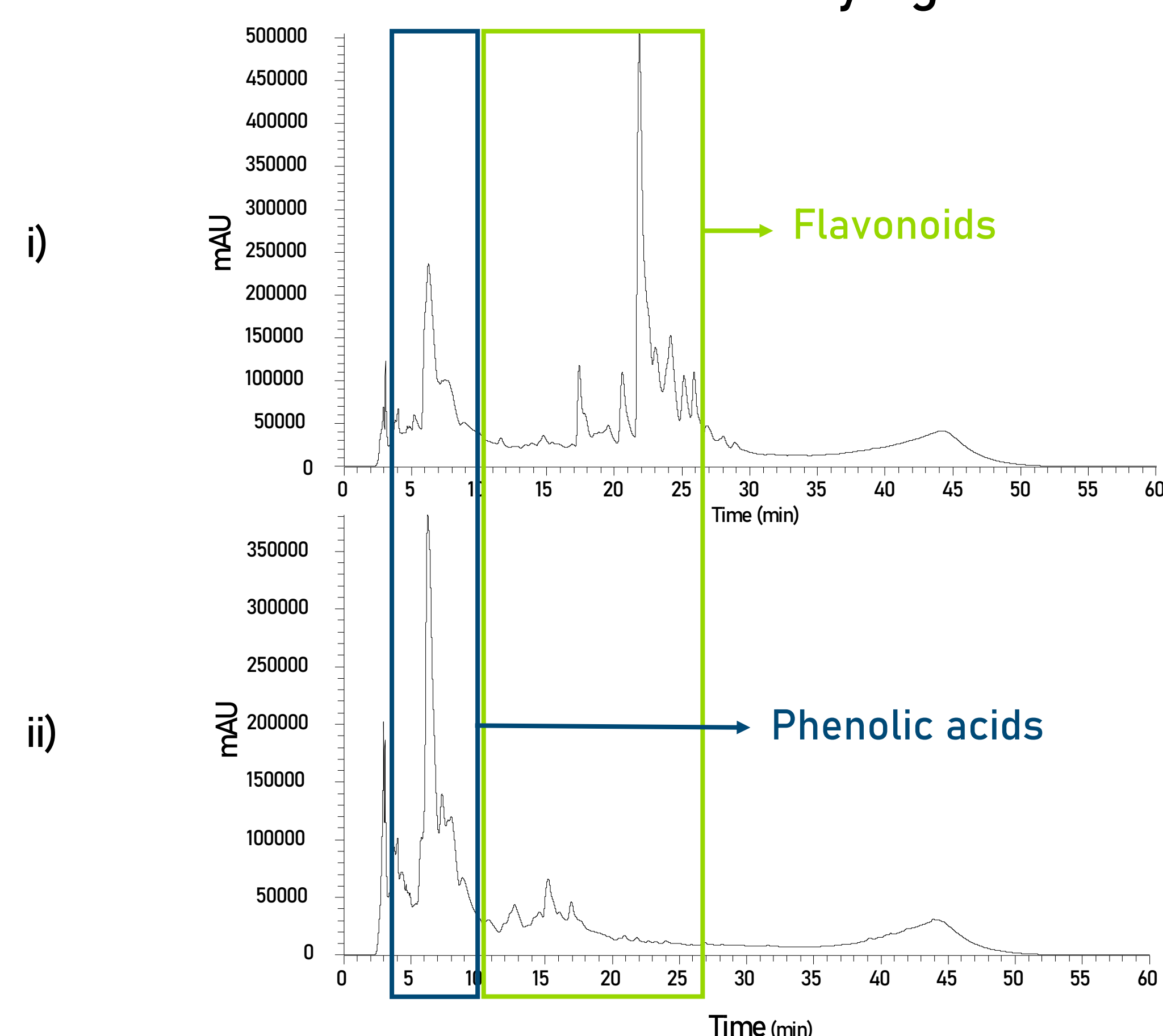
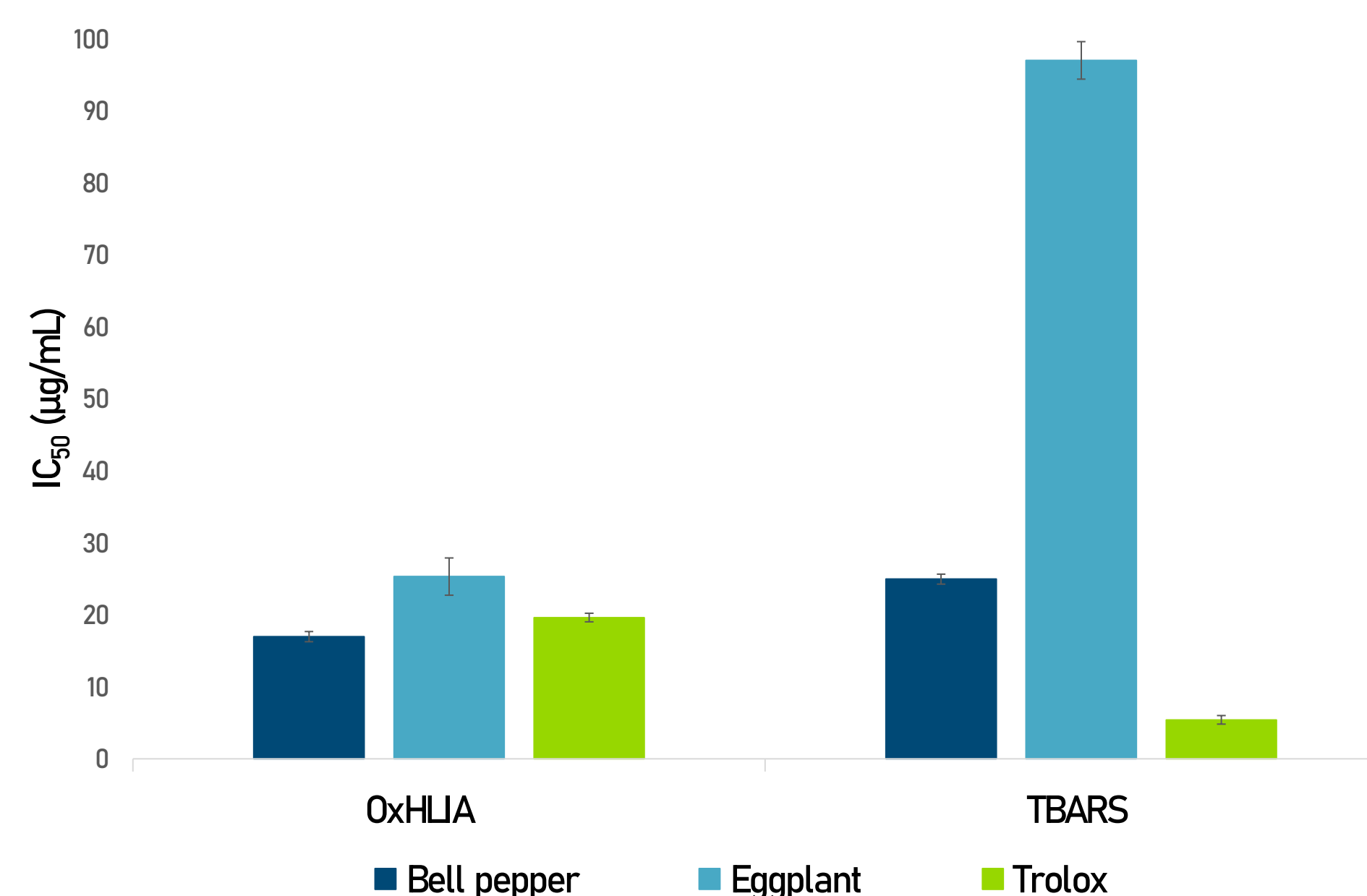


Fig. 2 Chromatograms of i) bell pepper and ii) eggplant by-product extracts



Activity against:
 · *Enterobacter cloacae*
 · *Escherichia coli*
 · *Listeria monocytogenes*

CONCLUSION

The obtained extracts seemed to be promising material for application in the food and nutraceutical industries, among other sectors, given their high potential to be used as natural preservative ingredients.

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