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Sustainability & Circular Economy

Exploring *Cynara cardunculus* L. potential for the food industry: the antioxidant pattern

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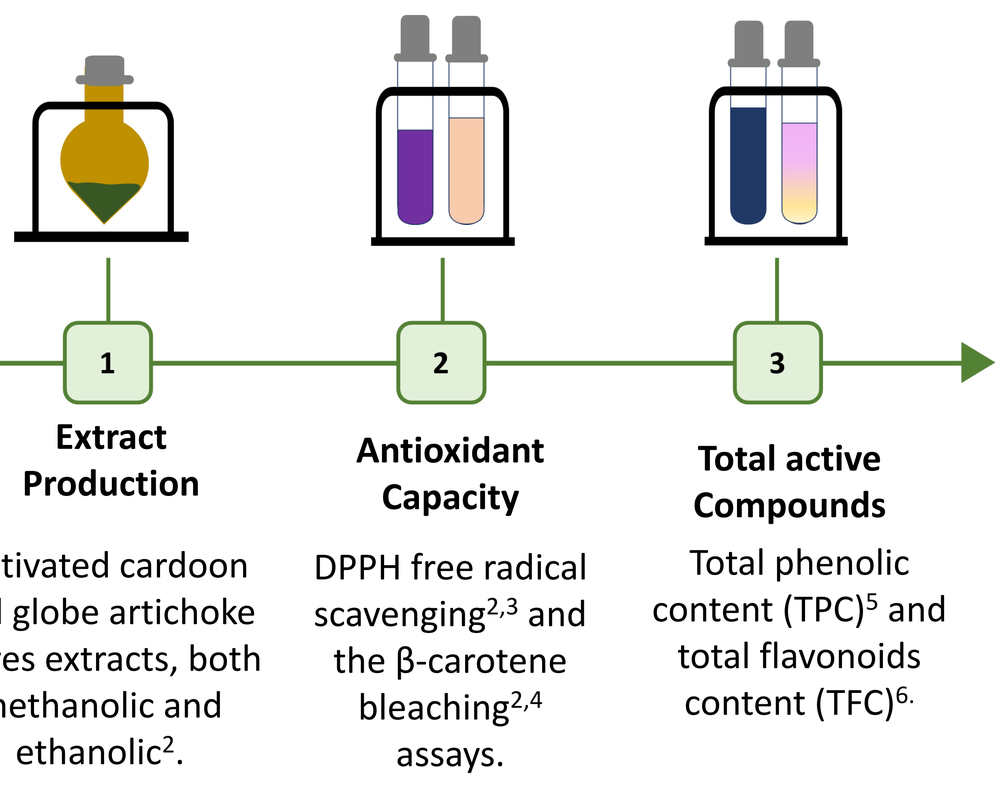
INTRODUCTION

Cynara cardunculus L. (cardoon) includes three varieties: the globe artichoke (var. *scolymus* (L.) Fiori), the cultivated cardoon (var. *altilis* DC.), and the wild cardoon (var. *sylvestris* (Lamk) Fiori) [1].

Cardoons' flowers are used in cheesemaking, where the leaves are the main by-product generated[1].

The leaves are rich in bioactive compounds, like apigenin, clorogenic acids and luteolin, with interesting antioxidant and antimicrobial properties[1].

MATERIALS AND METHODS



RESULTS

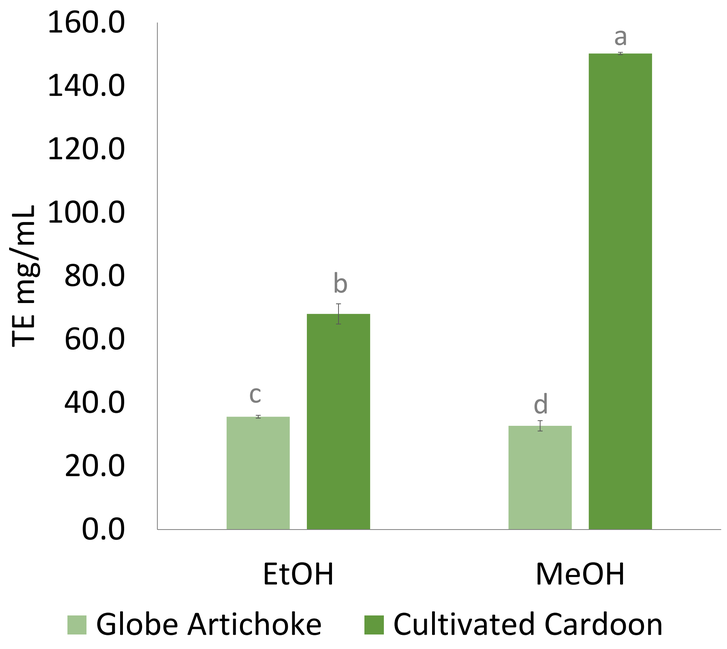


Fig. 1 – Results of the DPPH free radical scavenging assay expressed as trolox equivalent (TE) mg/mL

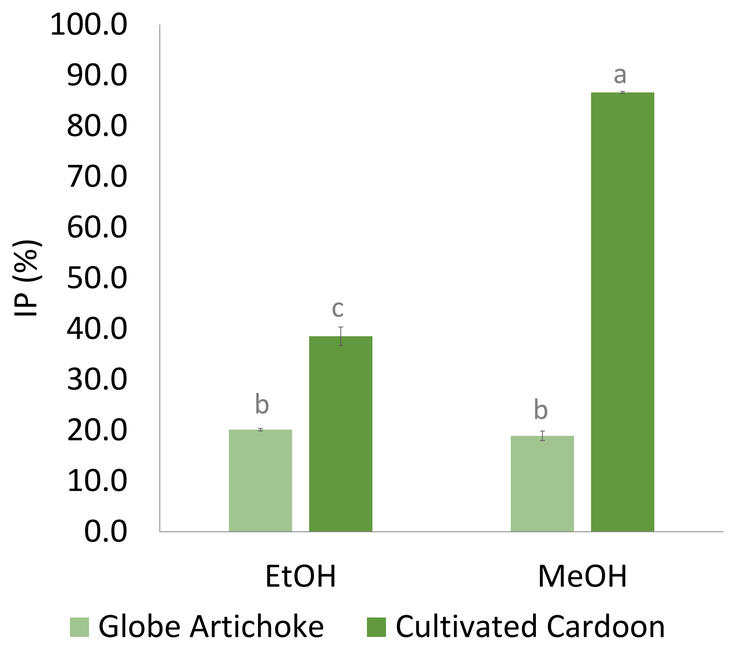


Fig. 2 – Results of the DPPH free radical scavenging assay expressed as inhibition percentage (IP %)

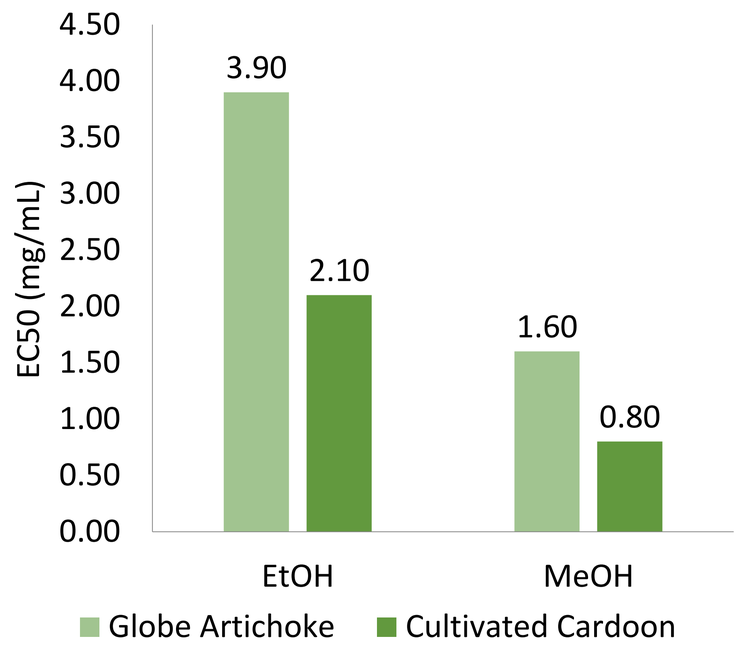


Fig. 3 – Results of the DPPH free radical scavenging assay expressed as EC50 (mg/mL)

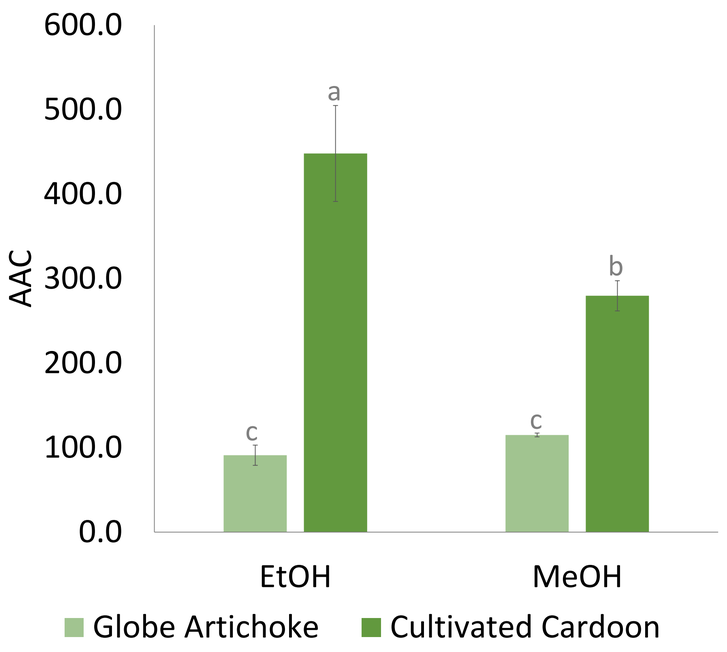


Fig. 4 – Results of the β-carotene bleaching assay expressed as antioxidant activity coefficient (AAC)

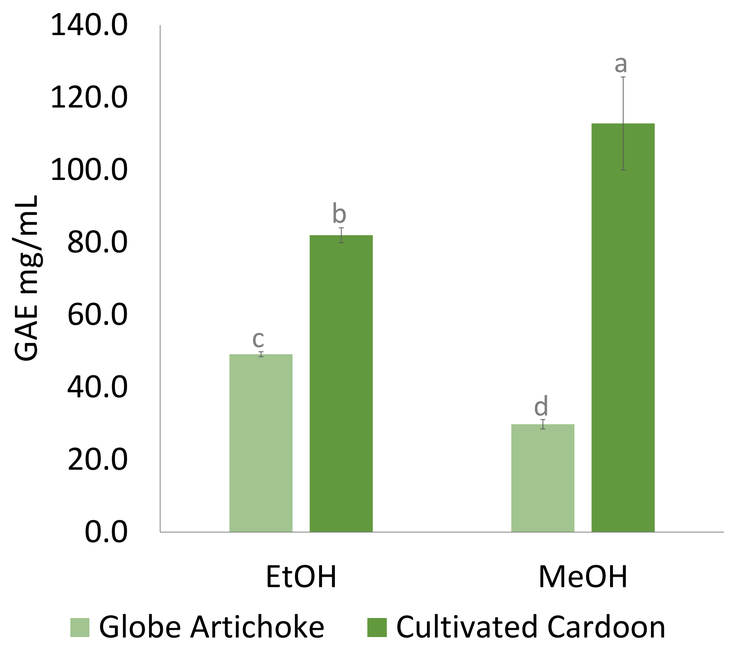


Fig. 5 – Results of the total phenolic content assay expressed as gallic acid equivalents (GAE) mg/mL

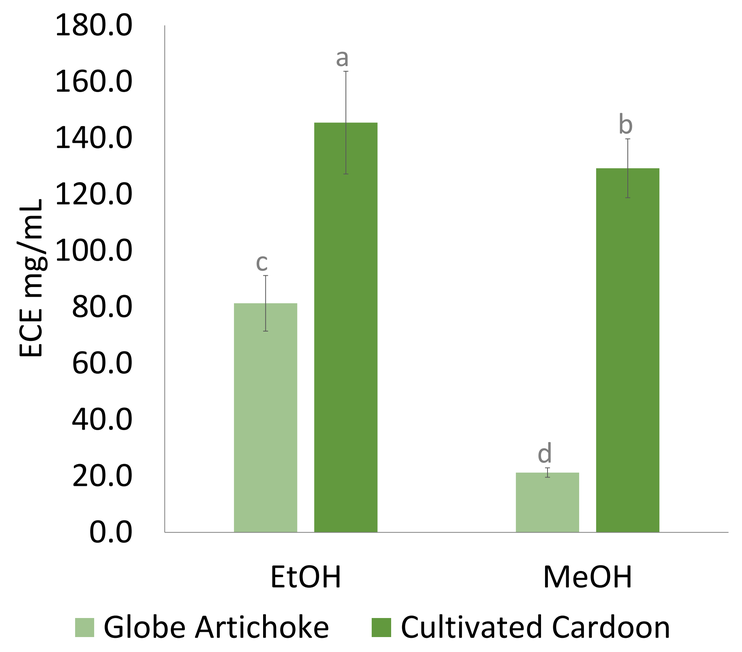


Fig. 6 – Results of the total flavonoid content assay expressed as epicatechin equivalents (ECE) mg/mL

CONCLUSIONS

Cultivated cardoon presented greater antioxidant capacity than globe artichoke. Cultivated cardoon showed lower EC50 values, which means greater antioxidant activity. The TE, IP, and AAC support these findings, showing that cultivated cardoon extracts have higher antioxidant capacity than globe artichoke, for both solvents. According to these results, cultivated cardoon also had a higher content of TPC and TFC. Overall, the methanolic extracts obtained better results than the ethanolic ones. These findings demonstrate that cardoon leaves are a natural source of antioxidant compounds that the food industry can use.

References: [1]Barbosa et al. Foods 2020, 9, 564; [2]Andrade et al. LWT 2018, 92, 497–508; [3]Moure et al. Food Res. Int. 2001, 34, 103–109; [4]Miller et al. J. Am. Oil Chem. Soc. 1971, 48, 91–91; [5]Erkan et al. Food Chem. 2008, 110, 76–82; [6]Yoo et al. Food Chem. 2008, 106, 929–936

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