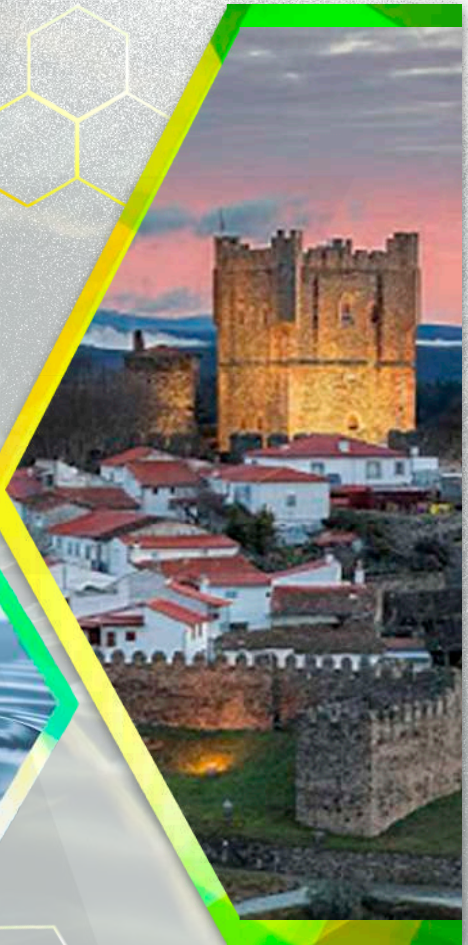




# Natural products application: Health, Cosmetic and Food

Provided by nature, adapted scientifically for industry



**Book of abstracts**  
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## OCF-03

## PHENOLIC COMPOSITION AND BIOACTIVE PROPERTIES OF CARDOON BRACTS: INFLUENCE OF THE GROWTH CYCLE

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*Cynara cardunculus* L. (cardoon) is a typical Mediterranean species that comprises the ancestor wild cardoon (var. *sylvestris*), the cultivated leafy cardoon (var. *altilis*) and globe artichoke (var. *scolymus*). It can be found worldwide due to its high adaptability to diverse climate conditions (e.g., resistance to extreme temperatures, water stress, and soils with variable pH) [1,2]. It is also considered a multipurpose crop due to its nutritional, pharmacological and industrial applications [2]. Due to the increase of its commercial and economic value, this study aimed to evaluate the polyphenolic composition and bioactive potential of cardoon bracts in relation to plant growth cycle. Cardoon bracts were collected in central Greece at eight different maturation stages (samples C1 – lower maturity to C8 – higher maturity). The phenolic profile was determined by HPLC-DAD-ESI/MS. The antioxidant activity was measured through two cell-based assays: TBARS (thiobarbituric acid reactive substances formation inhibition) and OxHLIA (oxidative hemolysis inhibition). Cytotoxic effects were screened against four human tumor cell lines and hepatotoxicity against a non-tumor cell line (PLP2) by the sulforhodamine B assay. The anti-inflammatory potential was tested through the inhibition of NO production by a murine macrophage cell line (RAW 264.7). Finally, the antibacterial and antifungal activities were evaluated by the broth microdilution method. Twelve phenolic compounds were tentatively identified in the cardoon bract extracts and quantified in higher amounts in immature samples. Immature bracts (C1) also revealed the highest cytotoxic (GI<sub>50</sub> of 30 – 79 µg/mL) and anti-inflammatory (IC<sub>50</sub> = 72 µg/mL) activities, while they presented the highest capacity to efficiently inhibit the formation of TBARS (IC<sub>50</sub> = 26.8 µg/mL). In contrast, the extract with the higher maturity grade (C7) revealed superior efficacy against oxidative hemolysis (IC<sub>50</sub> of 38 and 75 µg/mL at Δt=60 min and 120 min, respectively). The highest antibacterial and antifungal activities were attributed to samples C1 and C6 and samples C2 and C4, respectively. The results obtained in this work could be helpful to choose the best harvesting time of cardoon bracts, allowing obtaining a greater variety of phenolic compounds, and consequently, a higher bioactive potential, and ultimately the most appropriate use of their constituents. Nevertheless, further studies are needed to better understand the compounds responsible for the observed activities, as well as to reveal the mechanisms involved in these activities.

### References

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