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Chemical characterization and bioactivity properties of *Crithmum maritimum* L. grown under different fertilization regimes

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BACKGROUND

One of the most widespread wild edible plants (WEP) in the Mediterranean area is *Crithmum maritimum* L. (sea fennel or rock samphire). Its aerial parts are used in cuisine and popular medicine for their aromatic, antiscorbutic, diuretic, digestive, and carminative properties [1,2]. Sea fennel has recently been recognized as a "cash crop" and "emerging crop" in saline agriculture due to its high potential for adapting to soil salinization, erosion, and short-term water drought [1,3]. Therefore, agricultural domestication studies are emerging to boost its consumption and valorization [2-4].

Elements	CM-C	CM-1	CM-2	CM-3	CM-4	CM-5	CM-6
Nitrogen (N)	-	100	200	200	300	300	300
Phosphorus (P)	-	100	100	200	100	200	300
Potassium (K)	-	100	100	100	100	100	300

Nutritional profile

AOAC METHODS

Crude protein (AOAC, 991,02)

Total fat (AOAC, 989,05)

Total dietary fiber (AOAC, 991,43)

Ash (AOAC, 935,42)

Carbohydrates (by difference)

Tocopherols

HPLC-FL

Fatty acids

GC-FID

Phenolic compounds

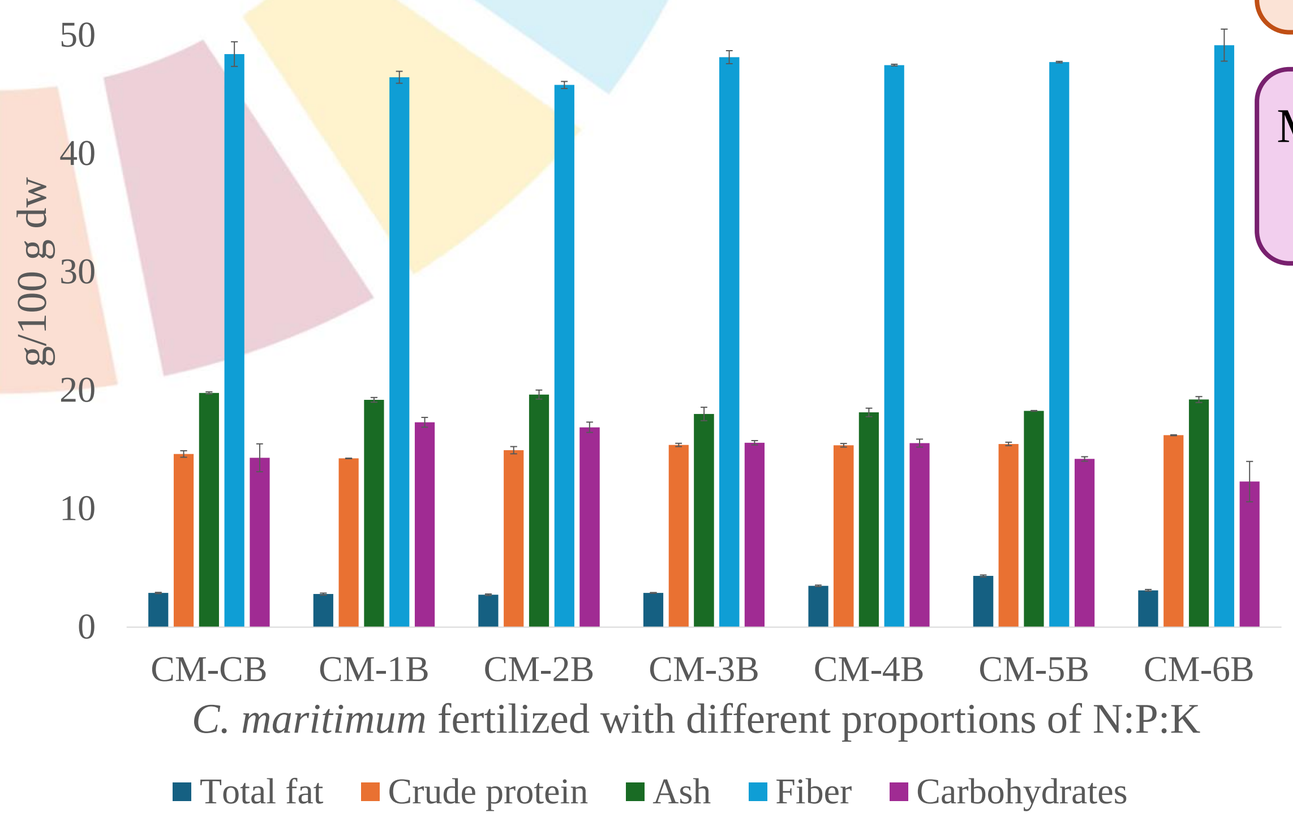
HPLC-DAD/ESI

Antioxidant and cytotoxic activities

TBARS and sulforhodamine B assays

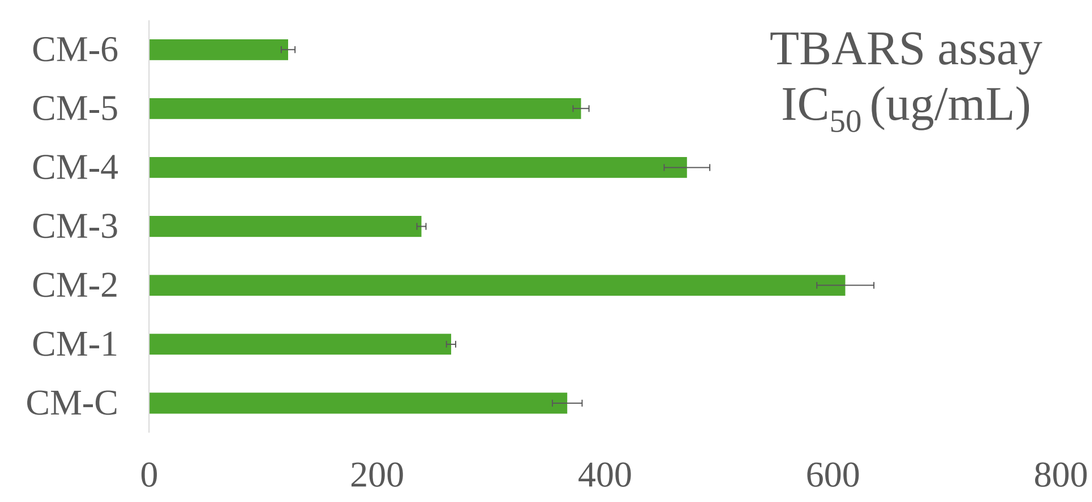
RESULTS

Nutritional profile of *C. maritimum*

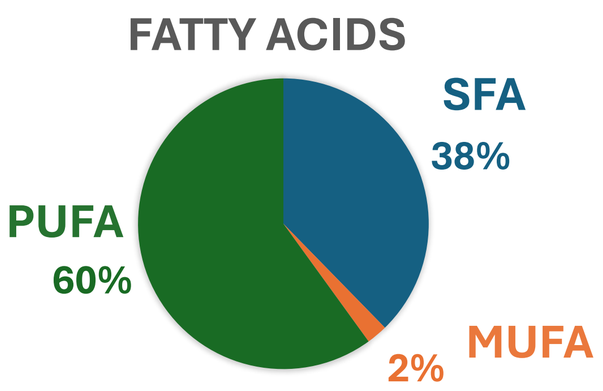


Higher concentrations of N were observed higher levels of **α-tocoferol**

More than 74% of the phenolic compounds were phenolic acids. The most abundant are derived from caffeoylquinic acid



The ratios of N:P:K did not show statistical difference in the fatty acids profile



The samples did not show activity at the maximum concentration tested (400 µg/mL) for anti-inflammatory and cytotoxic activities.

Customized fertilization enables the cultivation of sea fennel with enhanced content of potentially bioactive compounds.

Acknowledgements

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3 GOOD HEALTH AND WELL-BEING
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION

Sustainable Development Goals

This study not only highlights the nutritional and medicinal potential of sea fennel; by contributing to the development of health-promoting food sources (SDG 3) but also study supports responsible consumption and production by enhancing the nutritional value of crops, optimizing resource use, and reducing environmental impact through sustainable agricultural practices (SDGs 12 and 13).

References

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