

Effects of freezing, drying and storage period on bioactive properties of rocket and spinach leaves and watercress by-products

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Rationale and aim



- Shorter shelf-life
- Seasonality nature
- Rich sources of bioactive metabolites
- High antioxidant potential

Extensive losses and waste

Health-associated benefits

Processing into ingredients with a long shelf-life is an opportunity to reduce food losses and waste, developing value-added products.

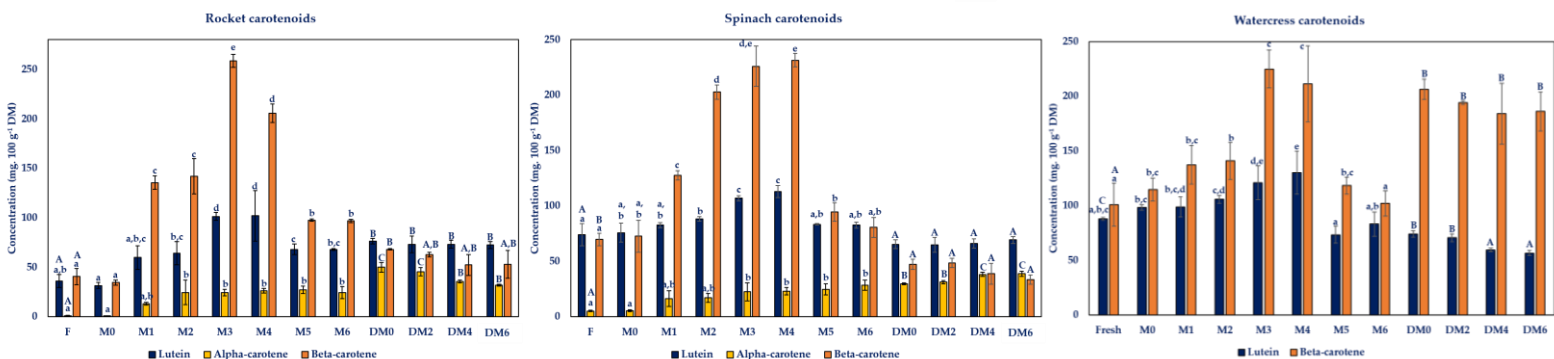
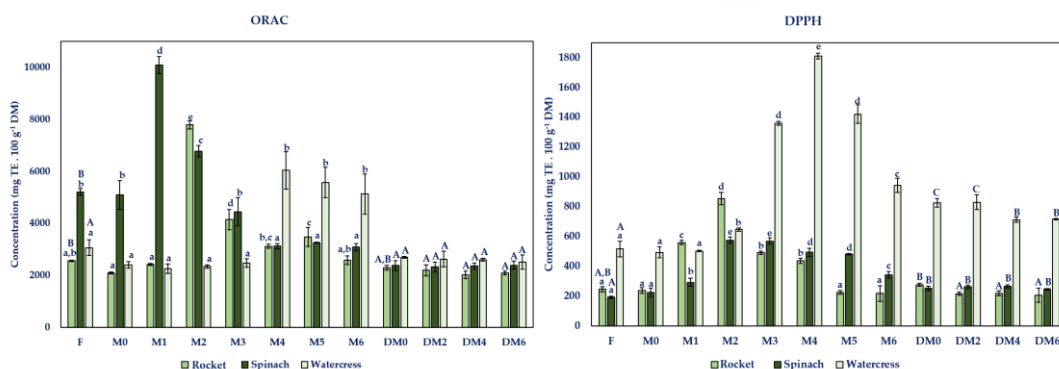
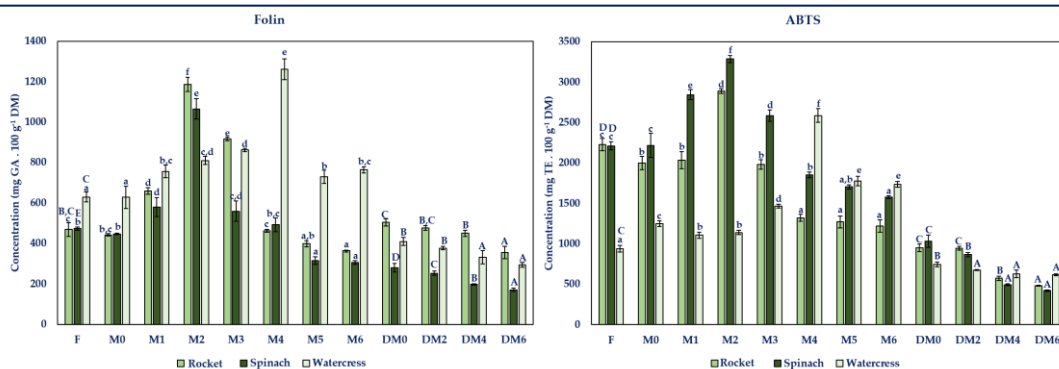
In this study, the impact of freezing (-20 °C) and drying (hot air) as well as the storage time (6 months) on some biological properties of spinach and rocket leaves and watercress by-products was investigated.

Materials and methods



Results and discussion

Microbiological monitorization: Microbial groups analyzed are within recommended microbial limits after washing and disinfection.



Conclusions

- TPC, AO and carotenoids of pulps increased during the first months of freezing but, after this period, decreased.
- In M6 of freezing, pulps showed higher TPC, AO and carotenoids values or values close to the fresh forms.
- In powders, the TPC, AO and carotenoids are often lower than fresh forms but, still demonstrating a high interesting profile. Contrary, DPPH and carotenoids analysis suggested an improvement during watercress drying.
- Generally, both forms preserved great antioxidant activity and bioactive compounds during storage and, in some cases, improving the bioactive profile of fresh by-products. The valorization and incorporation of rocket and spinach leaves as well as watercress by-products into the food chain as food additives or ingredients may play important role in food losses and waste combat.

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