

Effect of convective and freeze-drying processes on Galega kale quality

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Introduction

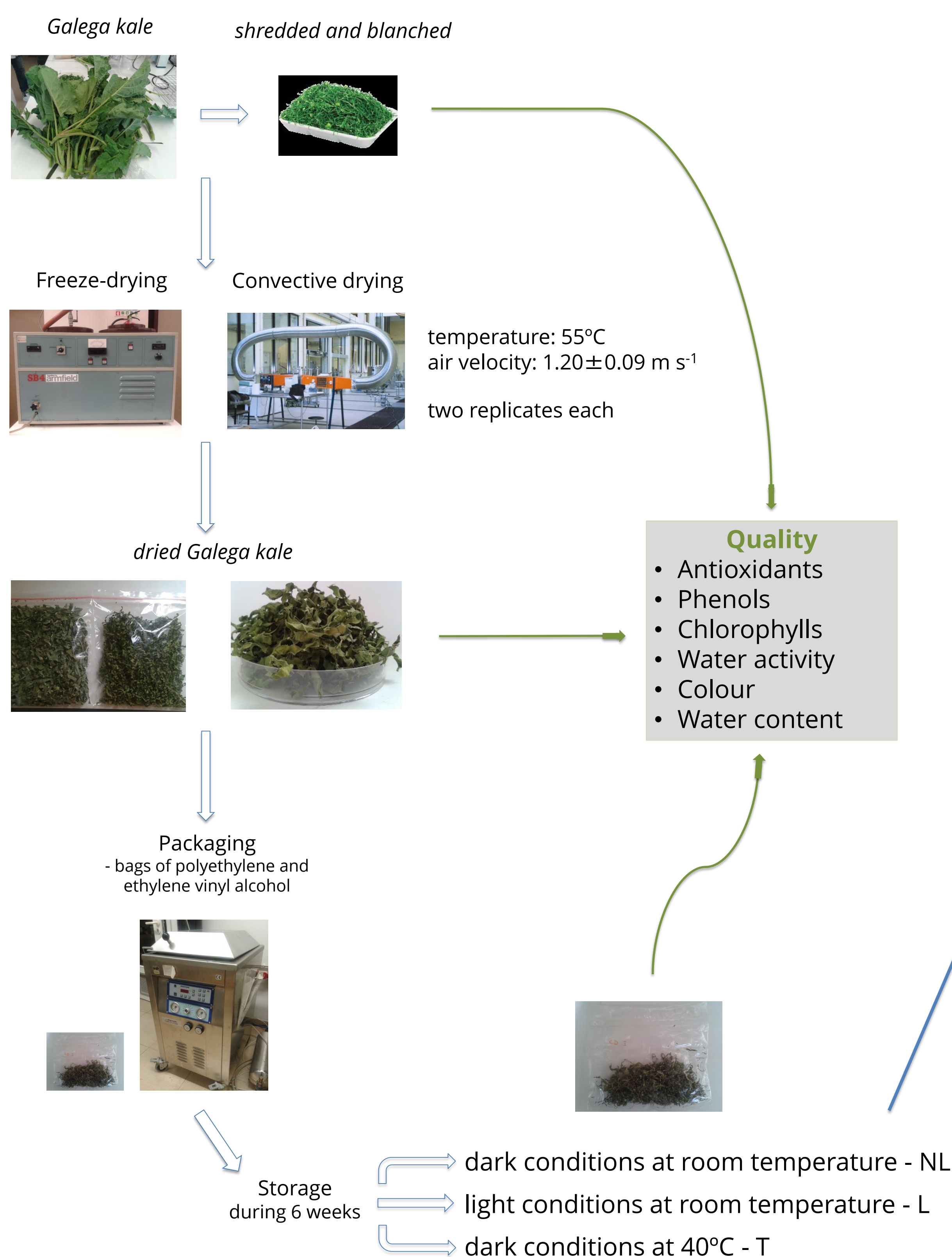
- Kale leaves are used for human diet and animal feed, having high contents of vitamins, minerals and glutamine, an amino acid which possesses anti-inflammatory properties.
- Shredded Galega kale (*Brassica oleracea* L. var. *acephala*) is one important ingredient of the Portuguese "caldo verde" soup, of the north-western Spanish "caldo gallego" soup, as well as of the Brazilian side dish "couve mineira".



Objectives

- The overall objective is the development of dried kale with added-value that can compete with refrigerated/frozen ones.
- Comparison between convective-dried and freeze-dried kale.
- Assessment of nutritional and physical aspects of fresh and dried kale; and along storage, using dark and light conditions.

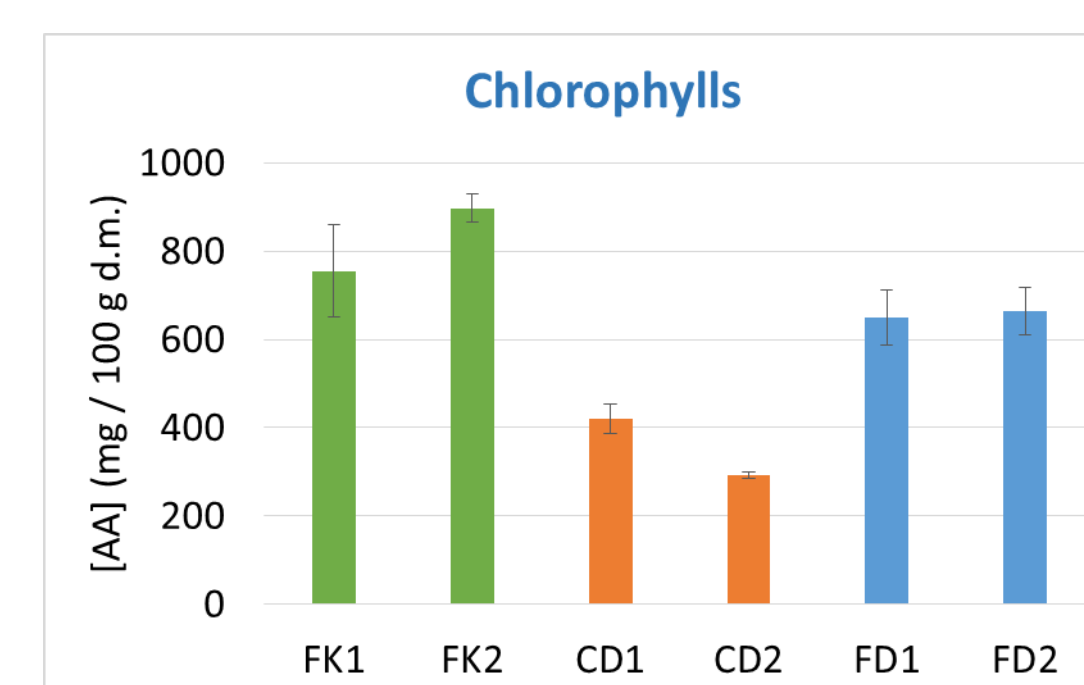
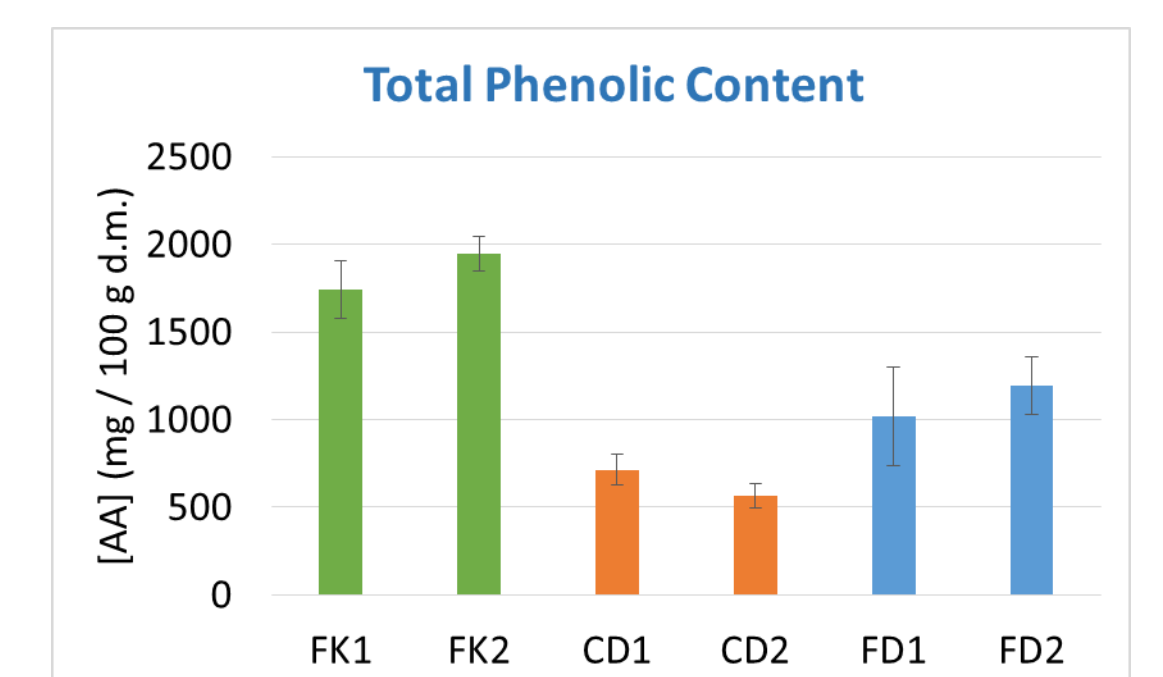
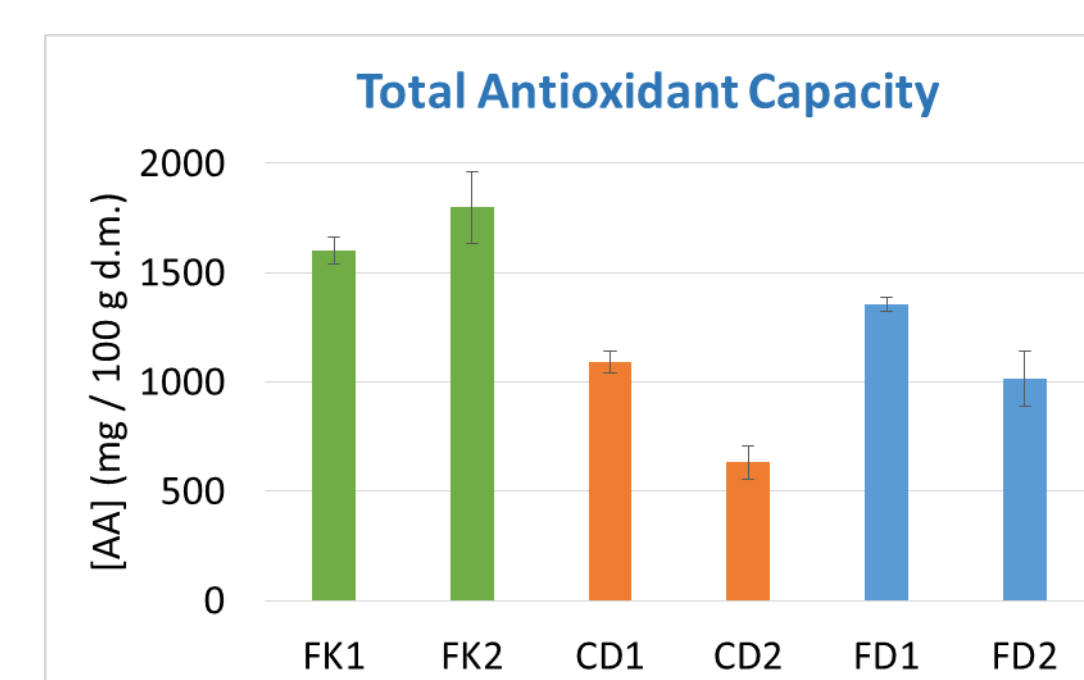
Materials & Methods



Results & Discussion

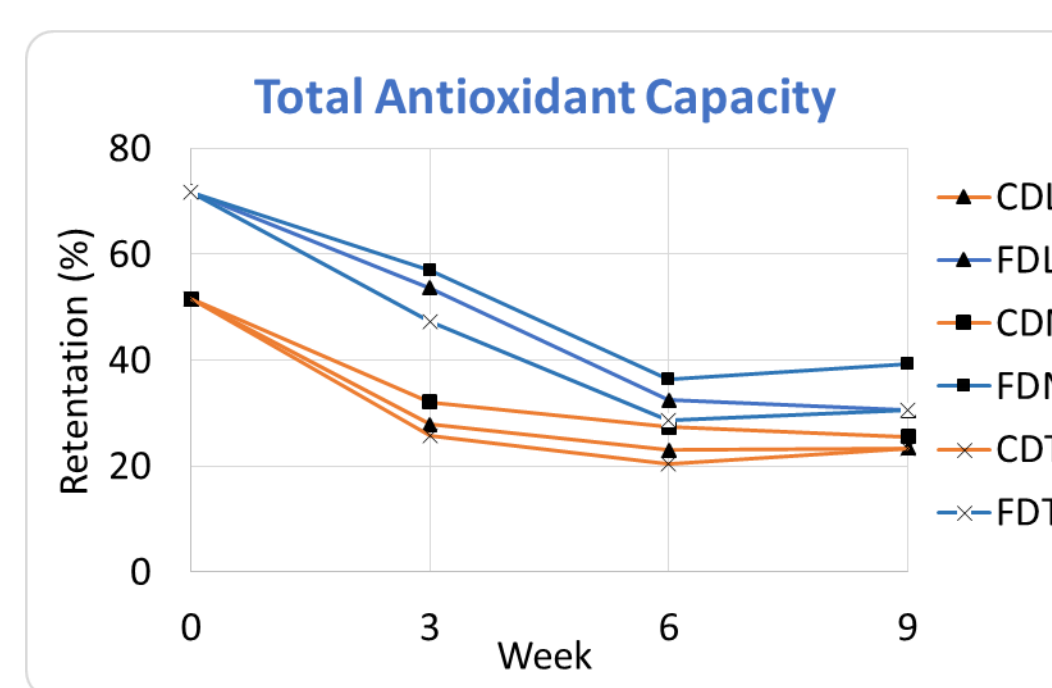
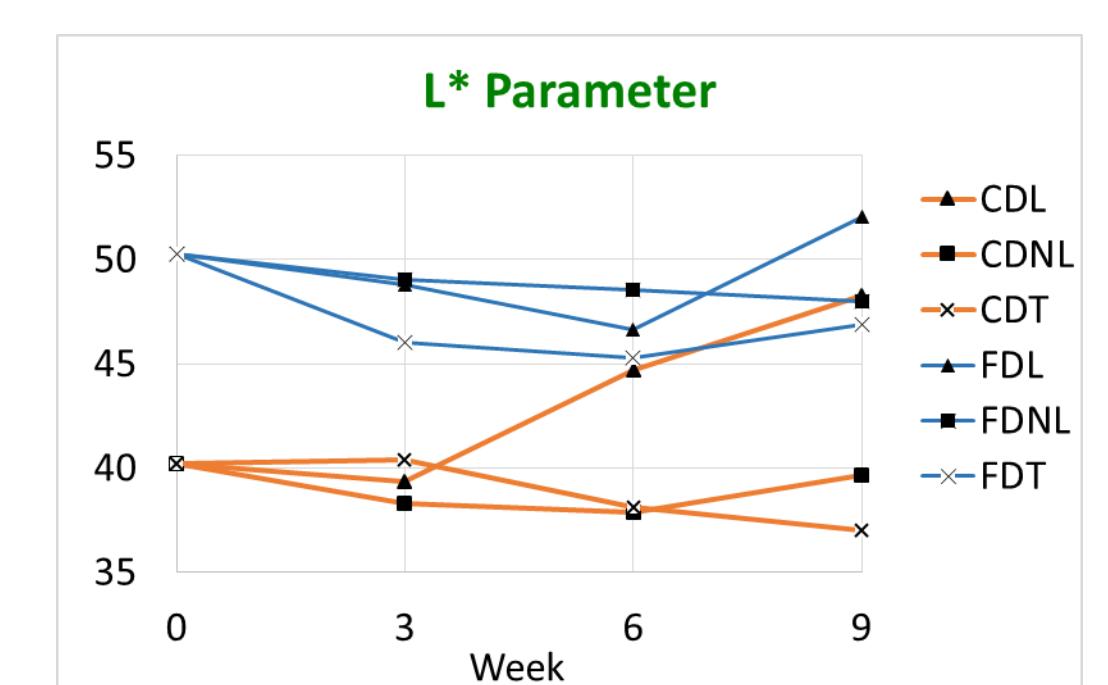
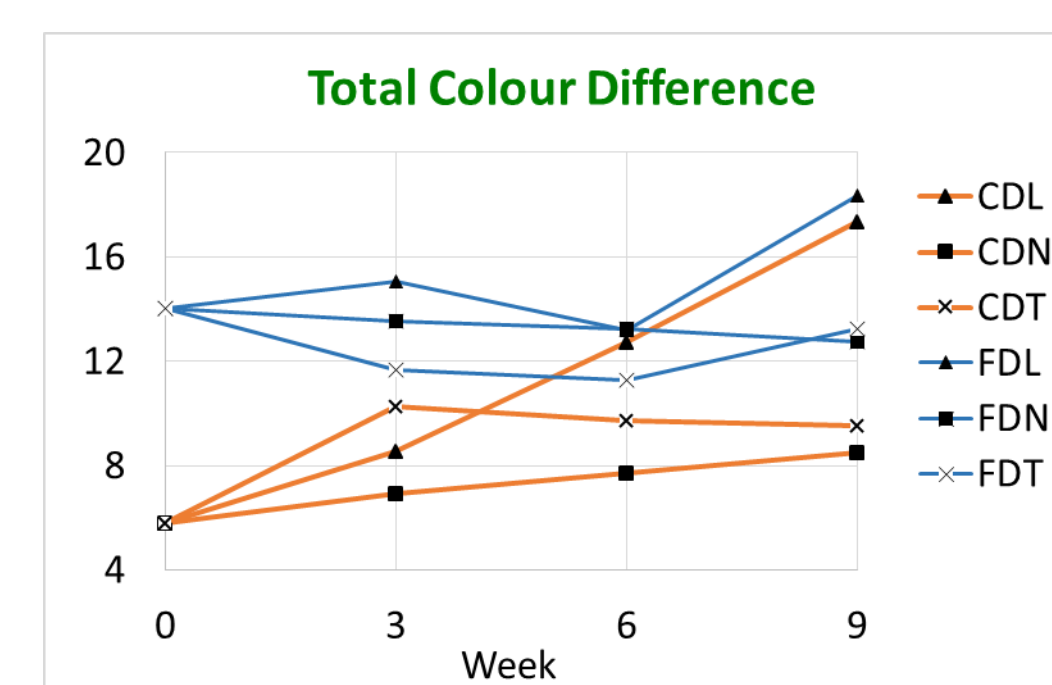
Convective drying vs. freeze-drying

CD - convective dried kale
FD - freeze-dried kale
FK - fresh kale
1, 2 - different replicates

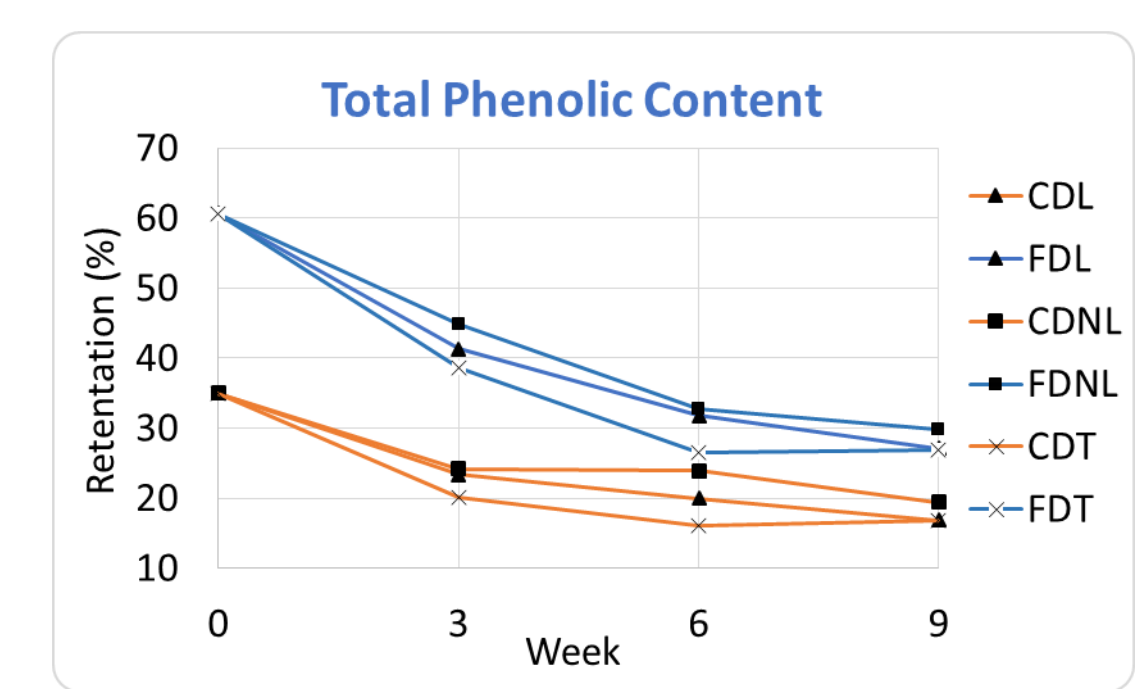
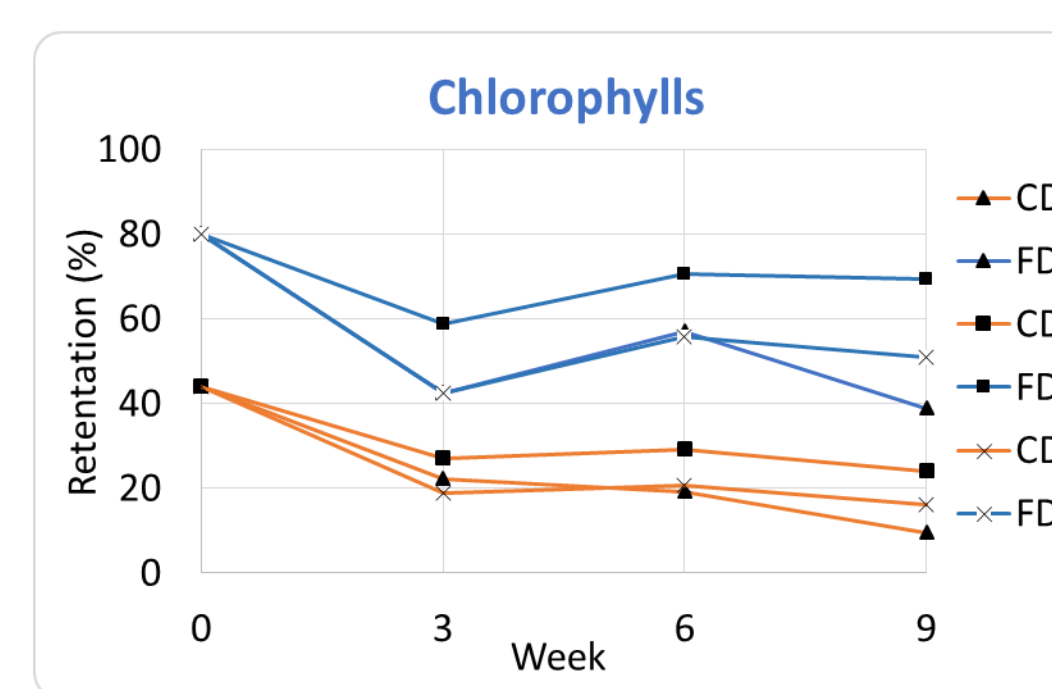


- The freeze-dried *Galega* kale presented higher values of total antioxidant activity, chlorophylls and total phenolic compounds when compared to the convective dried kale. However, colour characteristics more similar to the fresh product, were observed in the convective dried kale.

Storage under different conditions



- Throughout storage, bioactive compounds and colour degraded in both convective and freeze-dried samples, being more pronounced under light conditions and under dark conditions at 40°C.



Conclusions

- Dried *Galega* kale obtained by convective and freeze-drying processes can be considered a very interesting and convenient ingredient to be included in several dishes. However, if freeze-drying is used, the product obtained has a better overall quality.

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