SEA FENNEL FLAVORED VEGETABLE OILS

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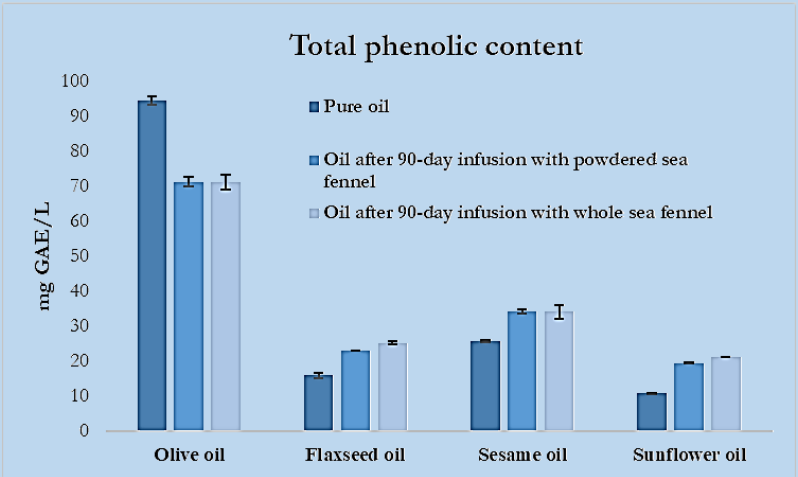
INTRODUCTION

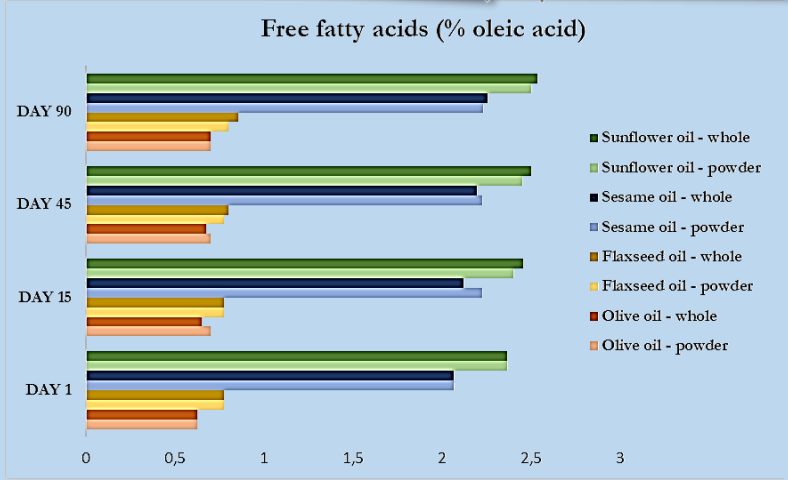
Traditionally, various herbs and spices are used to enhance the flavour and aroma of vegetable oils, but some herbs can also enrich the oils with oil-soluble biologically active compounds, which improves the nutritional value, biological activity and oxidative stability of the oils. Sea fennel (*Crithmum maritimum* L.) is an edible Mediterranean halophyte, rich in bioactive compounds and known for its antioxidant, anti-inflammatory, antimicrobial and enzyme inhibitory effects.

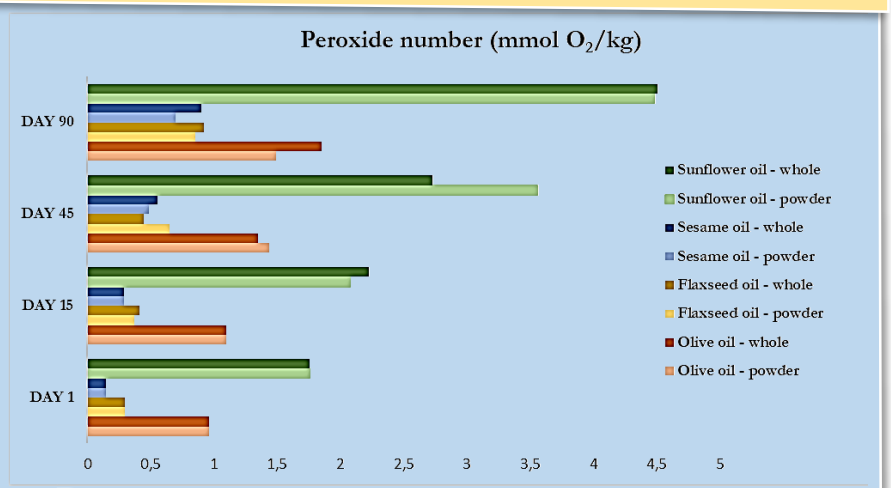
METHODS AND MATERIALS

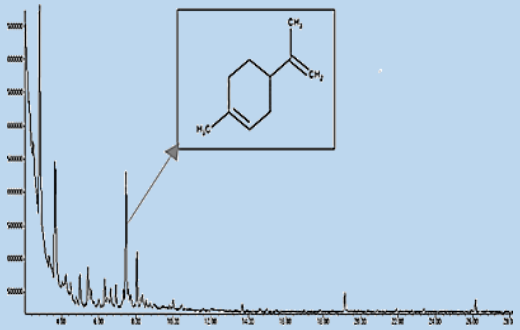
The aim of this work was to investigate the effects of infusion, during the 90 day period, of ground and whole freeze-dried sea fennel leaves (1 g per 100 mL of oil) on the aroma and chemical composition of four different unrefined edible vegetable oils: olive, sunflower, sesame and flaxseed oil. The oils' phenolic content, free fatty acids and peroxide numbers were determined by IOC methods, as well as aroma components using GC-MS.

RESULTS









	FREE FATTY ACIDS				
	16:0	18:0	18:1	18:2	18:3
OLIVE OIL	11.02 ± 0.49	3.23 ± 0.04	75.51 ± 0.55	7.87 ± 0.07	1.21 ± 0.03
OO + SEA FENNEL	11.20 ± 0.47	3.23 ± 0.06	75.47 ± 0.36	7.72 ± 0.01	1.21 ± 0.05
FLAXSEED OIL	5.56 ± 0.05	3.91 ± 0.02	19.25 ± 0.04	15.64 ± 0.01	55.24 ± 0.08
FO + SEA FENNEL	5.38 ± 0.33	3.95 ± 0.06	19.29 ± 0.06	15.67 ± 0.01	55.32 ± 0.20
SESAME OIL	8.01 ± 0.25	5.55 ± 0.06	40.71 ± 0.14	44.38 ± 0.02	0.93 ± 0.02
SEO + SEA FENNEL	8.10 ± 0.14	5.56 ± 0.03	40.71 ± 0.09	44.33 ± 0.01	0.93 ± 0.02
SUNFLOWER OIL	6.27 ± 0.06	3.36 ± 0.02	31.54 ± 0.04	57.35 ± 0.04	0.41 ± 0.01
SUNO + SEA FENNEL	6.38 ± 0.01	3.37 ± 0.02	31.60 ± 0.07	57.13 ± 0.18	0.46 ± 0.01

CONCLUSION

The results showed an increase in phenolic content of the infused oils in all the samples, but olive oil. With time, peroxide numbers and free fatty acids increased in all the samples, which also reflected on their free fatty acids and volatile profiles. GC-MC analysis showed the effect of aromatization of the oil by the addition of dried plants and confirmed the differences between the samples. The result suggest that the addition of sea fennel to vegetable oils leads to changes in their chemical composition. Although the parameters tested varied between the oils used, in most cases the addition of sea fennel had a negative effect on oil chemistry and stability during the test period.

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