

The synergism between antioxidants in herbs and spices on the inhibition of radical chain reactions through kinetic approaches

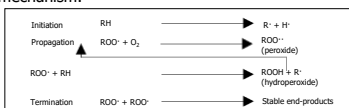
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The antioxidant activity

Oxidation is a common process that affects the organoleptic characteristics of food leading to oxidation products and off-flavours. It affects mainly lipids since they undergo the radical chain reaction mechanism.



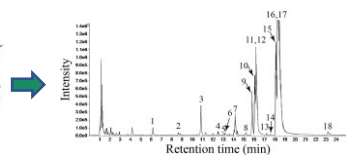
Herbs and spices as natural antioxidants for food preservation



Help interrupt the chain mechanism:

- avoid initiation
- interrupt propagation
- accelerate termination

Synergism between antioxidant compounds



A food extract is a complex matrix represented by different compounds: polyphenols, organic acids, volatiles...
...the interactions among all these compounds are not accounted

$$1 + 1 = 3$$

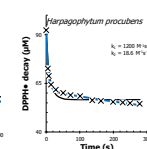
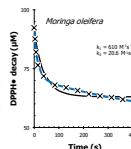
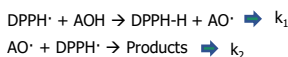
They could bring to a new generation of natural antioxidants



Important to meet the consumer's demand for a clean label

Aim of the research and methods

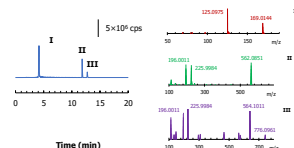
1. Studying the antioxidant activity of natural extracts through kinetic approaches



2. Evaluating the interaction between compounds and how this interaction influences the antioxidant activity



3. Enrichment of a food matrix to predict the antioxidant performance: the employment of natural and local extracts to inhibit the lipid peroxidation



4. Characterization of molecules responsible for the antioxidant properties and relevant products of the reactions



Conclusions

Herbs and spices are important in the local culinary tradition, therefore using their natural properties to enrich a food matrix valorizes the territory.

Moreover, the findings of this research could improve the methodologies involved in the study of the antioxidant activity of complex matrices, highlighting the mechanism behind the interactions between two or more compounds.

Achievements

- 23rd Frühjahrssymposium (Leipzig, DE)
29.03.21-01.04.21 – International conference, Poster presentation
- 9th MS J DAY 24.06.21 – National conference, Oral presentation
- Publication of 1st paper 24.06.21 – A novel stoichio-kinetic model for the DPPH• assay: the importance of the side reaction and application to complex mixtures

