

*Title:* **Measuring the antioxidant capabilities of different essential oils through an oxygen uptake apparatus**

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There have been many efforts to find natural alternatives for synthetic antioxidants widely used in the food industry, such as BHT or BHA, especially since a debate between a potential link between their consumption and an augmented cancer risk arose. One of the options that has lately gained more weight has been the use of essential oils, as some of them contain plenty of phenolic antioxidants.

In this work the antioxidant capabilities of 11 essential oils have been measured, using an oxygen uptake apparatus (which was previously calibrated), a quantitative and reliable method to measure the rate of autoxidation of an organic substrate. Different oxidizable molecules have been used, such as styrene, cumene and purified olive oil. It was found that 7 out of the 11 oils tested showed a predominant antioxidant activity, making them good candidates to be used as preservative ingredients.

The different radicalary mechanisms that organic molecules undergo while they are being oxidized were reviewed, which are crucial in order to quantify the antioxidant power of a certain molecule. A total of four preminent equations derived from the autoxidation kinetics of the organic substrates were used to transform the raw data extracted from the oxygen transducer to relevant information.

**Keywords:** Essential oils, antioxidants, autoxidation, olive oil, phenols.