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## **STUDY OF THE OXIDATION STABILITY OF OILS ADDED WITH OREGANO, THYME AND BASIL**

Iuliana POPESCU<sup>1</sup>\*, Florina RADU<sup>2</sup>, Anca HULEA<sup>3</sup>, Diana OBISTIOIU<sup>3</sup> University of Life Sciences "King Michael I" from Timisoara, Faculty of Agriculture, 1. Department of Soil Sciences, e-mail: iuliana\_popescu@usvt.ro 3. Department of Agricultural Technology, anca.hulea@usvt.ro, dianaobostioiu@usvt.ro

Faculty of Food Engineering, Department Food Technology, <u>florinaradu@usvt.ro</u> Corresponding author iuliana\_popescu@usvt.ro

**Abstract**: Oils with a high content of polyunsaturated fatty acids have low oxidation stability, the extension of shelf life is achieved by adding vitamin *E*. The aim was to determine the period at which oxidation products appear at temperatures of 90, 80, and 70°C, respectively, under conditions of accelerated oxidation with oxygen at a pressure of 6 bar, in sunflower oil with oregano, thyme and basil powder in different concentrations.

• Introduction

In the current context of increasing health and nutrition awareness, interest in vegetable oils and improving their oxidative stability has increased considerably. The oxidative stability of vegetable oils is an essential aspect for the food industry, having a direct impact on the quality, nutritional value and safety of food. Sunflower oil, one of the most widely used vegetable oils in world cuisine, is appreciated for its high content of vitamins and unsaturated fatty acids, especially linoleic acid, but, due to its content, it presents a major vulnerability to oxidation. Oxidation of edible oils not only reduces the nutritional value and taste of the product, but also generates compounds harmful to the health of consumers.

## Results and discussions



Figure 1. Induction periods of oil samples



Material and method

The material used in the study consisted of dry powders from oregano, thyme and basil spices that were added at a rate of 0.1% in refined sunflower oil. The analysis of the antioxidant effect of aromatic plant powders mixed in sunflower oil was carried out with the OXITEST device from Velp Italy, which determines the time at which oxidation products appear by a sudden decrease in pressure, under conditions of accelerated oxidation with oxygen at a pressure of 6 bar and temperatures of 90, 80 and 70 °C. From the data obtained, the shelf life of the oil

Figure 2. Comparative formula of the results obtained Based on repeatability tests at 90oC, an increase in the stability of sunflower oil added with oregano by 2.9% compared to the control was observed, while samples with thyme and basil, respectively mixtures, showed a decrease of up to 46%.

## Conclusions

Maceration of aromatic plants in oil at room temperature leads to the extraction of both volatile compounds and phenolic compounds.

The antioxidant effect of oregano powder is explained by the high content of hydrogenated terpenes compared to oxygenated ones, but also of polyphenols extracted through maceration. In the case of thyme and basil, the compositional profile of the volatile oil revealed a higher share of oxygenated terpenes, the antioxidant capacity manifesting itself differently depending on the hydrophilic/hydrophobic compounds ratio. Determinations at lower temperatures below 70°C are necessary - analysis times are much longer, in



