

THE IMPACT OF ANTIOXIDANTS ON THE OXIDATIVE STABILITY OF SOME EDIBLE OILS

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The present study aimed to investigate the effectiveness of the use of some antioxidants as inhibitors of some edible oils oxidation (grape seeds, walnuts and corn germ). Lipid oxidation is one of the major causes that decrease the nutritional value of food products and reducing their shelf life. This phenomenon leads to changes in the nutritional and organoleptic quality of the edible oils. Lipid self-oxidation is recognized as the main oxidation mechanism in edible oils and fats. Inhibition of the lipid self-oxidation process is important for various industrial applications, especially for the food industry [1, 2]. In order to study and select antioxidants used for inhibiting the oxidative process, it was necessary to study and understand the mechanism of the lipid oxidation process in the absence and in presence of antioxidants. It was found that the forced oxidation process of edible oils is completed in about 600 hours.

Lipid oxidation, especially edible oils that contain unsaturated fatty acids, lead to the formation of a wide range of aldehyde compounds. The formation of these compounds was monitored during the process of forced oxidation for 48 hours. Analysing the dynamics of hexanal formation during the oxidation of edible oils, was noticed that the hexanal formed following the oxidation of lipids in grape oil has a constant evolution throughout 48 hours. The initial values at 0 hours of oxidation the values are considerably lower, which during 24 hours attests an essential increase of the hexanal content formed both for the grape oil and for the walnut or corn oil. When studying the process of inhibiting the oils oxidation, the action of α -tocopherol, n-octyl gallate, L-ascorbic acid, 6-palmitate and green tea extract was analysed. As a result of the analysis of antioxidants influence on the studied edible oils, was established that the most effective oxidation inhibitors are n-octyl gallate and 6-palmitate or L-ascorbic acid. A less pronounced action was found for α -tocopherol and green tea extract. It was found that edible oil samples enriched with antioxidants showed considerably lower values compared to the oxidized oil samples, which is explained by the slowdown in the formation of lipid oxidation products such as peroxides and hydroperoxides.

Keywords: oxidation, grapeseed, corn germ, walnut, green tea.

References:

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