

A physico-chemical study for some edible oils properties

Anișoara-Arleziana NEAGU¹, Irina NIȚĂ*¹, Elisabeta BOTEZ² and Sibel GEACAI¹

¹ *Department of Chemistry and Chemical Engineering, „Ovidius” University of Constanta, 124 Mamaia, Constanta 900527, Romania*

² *Department of Food Science, Food Engineering, Applied Biotechnology, "Dunărea de Jos" University, 111 Domneasca, Galați 800201, Romania*

Abstract In the present paper we have experimentally determined the density, saponification value, iodine value, acid value, peroxide value for four different edible oils: sunflower oil, corn oil, rapeseed oil and peanut oil. Density was determined in the temperature range of 20 °C - 50 °C, with a 10 degree step increase. The physico-chemical properties of the investigated oils were within the requirements of food domain: saponification value varied from 164.84 to 206.45 mg KOH/g, peroxide value varied from 9.99 to 24.49 mEq O₂/kg of sample, acid value varied from 0.22 to 3.97 mg KOH/g, iodine value varied from 94.35 to 102.02 g I₂/100 g sample, and density varied from 0.9031 to 0.9208 g/cm³. Based on experimental data, density were correlated with others properties of edible oils. An empirical model was proposed to correlate oil density with iodine value and temperature. The results of the proposed model were compared with a model from literature. The accuracy of the proposed model was very good, the AAD varying in the range of 0.078 % to 0.092 %. The proposed model can be recommended for density of vegetable oils evaluation based on their IV, at different temperatures in the range of 20 °C to 50°C.

Keywords: density, edible oils, physico-chemical properties.
