

The Effect of Activated Carbon in Regeneration of Used Frying Oils

Maryam Gharachorloo^a, Mehrdad Ghavami^b

^a Assistant Professor of College of Food Science & Technology, Islamic Azad University, Science & Research Branch, Tehran, Iran. E-mail: gharachorlo_m@yahoo.com

^b Associate Professor of College of Food Science & Technology, Islamic Azad University, Science & Research Branch, Tehran, Iran

Deep fat frying is an important processing procedure for the preparation and production of foods. During this practice the oil is continuously or repeatedly subjected to high temperatures in the presence of air and moisture. Various changes and degradation reactions occur as the result of oxidation, polymerization and hydrolysis that consequently decrease the quality of the oil and the finished product. The quality of the oil might be improved by using different adsorbents to remove the undesirable compounds or artifacts produced during frying practice. The effect of activated carbon in combination with acid activated earth and laboratory synthesized earth to remove undesirable compounds at regeneration temperature of 110°C was evaluated. It is concluded that acid activated earth and laboratory synthesized activated earth separately or in combination with activated carbon reduced the free fatty acid content. Addition of activated carbon to acid activated and synthesized earths increased the percent reduction of the free fatty acid content to the extent of 57.8% and 40% respectively as these figures were compared to their relative effect of substrates without the addition of activated carbon. A combination of earths with activated carbon proved to be quite effective to remove polar compounds particularly when synthesized earth was employed concluding that the percent reduction was increased to the extent of 73.24% as compared to the percent reduction when activated carbon was excluded. Addition of activated carbon to acid activated and synthesized activated earths increased the percent reduction of peroxide value to the extent of 4.15% and 9.96%, respectively, as compared to percent reduction of peroxide value by using these adsorbents without activated carbon. The effect of activated carbon to remove other undesirable compounds namely Trans fatty acids and color has been considerable which might be due to the physical and chemical characteristics of this adsorbent.