Investigation of Palm-cottonseed Blend Oil Properties

Hüseyin Kara[ab], H.Filiz Ayyildiz[b], Fatma Nur Arslan[b], Mustafa Topkafa[b], Huriye Cakır[b], Tufail Sherazi[c]

[a]Necmettin Erbakan University, Faculty of Science, 42090, Konya TR

[b]S.U. Faculty of Science, Department of Chemistry, 42075 Konya, Türkiye

[c]National Center of Excellence in Analytical Chemistry, University of Sindh, Jamshoro, Pakistan

e-mail: hkara@konya.edu.tr

Palm oil is generally used in frying process as it is characterized by a higher smoke point, tocopherol and tocotrienol content and composition and a stronger resistance to thermoxidation than most of the other vegetable oils; The change in colour is believed to be due to traces of carotenoids that remain after refining of the oil, and the carotenoids darken at the high temperatures used for frying. The darkening of the oil can be reduced by use of a blend of palm oil with other oils for frying.

Cottonseed oil is also widely used for frying process because of features such as having good fatty acid profile, high smoke point, oxidative and flavor stability. With this properties cottonseed oil can be distinguish from other vegetable oils and especially it is excellent for frying processes as palm oil and its derivaties

Fats and oils used for commercial frying operations must be stabilized to prevent any changes caused by oxidation, polymerization or hydrolysis during high temperature use. Modifying the fatty acid composition of the oil is the most common method used to obtain the stabilized frying oil. Blending polyunsaturated oil with more saturated or monounsaturated oils is an option to adjust fatty acid levels to optimal level. In this study; due to the high tocopherol contents and higher unsaturated fatty acid composition than palm oil, cotton seed oil was used for preparation of blend oil with palm oil and palm olein.

This lecture focused on the investigation of palm/cottonseed oil blends formulation with the proper proportions that may represent a valid alternative to pure oil in deep frying. The chemical changes (polar and polymeric compounds, oxidation product, tocopherols and tocotrienols) occurred when the cottonseed/palm oil blends is used were compared with those of the other common frying oils. The reduction in the rate of polymer formation, the increase in viscosity during long periods occurs more slowly than the other oils. As a result of frying experiments, it can be noted that in general the blends have better keeping properties than pure oils.