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Effect of Alpha-Tocopherols Incorporation in Corn Oil on Its Resistance to Frying Temperature

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ABSTRACT

Extending the frying life of oil is of commercial and economic importance. Therefore, improving the thermal stability of cooking oils provide considerable savings to the food processors. In this study, frying temperature at 180°C was applied to refined corn oil before and after additional of two levels of alpha-tocopherols, which is CO-3T and CO-10T. A number of official methods such as peroxide value test, iodine value test and fourier transform infrared spectrometry were used to evaluate chemical changes in oils samples during frying process. Stability of refined corn oil was improved by treatment with alpha-tocopherols. In fact, the statistical analysis proved a significant difference ($P < 0.05$) of stability between untreated and treated corn oil samples. Among the treated corn oil samples, sample CO-10T exhibited a high ability in reducing the peroxides value and breakdown of double bond of unsaturated fatty acids. The results that obtained from the conventional methods were comparable with the fourier transform infrared spectrometry results. In addition, sample CO-10T was found have significant different ($P < 0.05$) in term of thermal stability compare with sample CO-3T. In conclusion, the incorporation of 1000ppm of alpha-tocopherols in corn oil helped to improve its thermal stability and consequently to extend the frying life.