Study on characteristics and stability of some edible oils

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The aim of this study was to investigate : 1- Some physical and chemical changes as well asfatty acids composition, of soybean, sunflower and palm oils during intermittent frying”Falafel”, 2- The effect of adding 200 ppm vitamin E on the stability of soybean oil during frying process.3- The effect of storage on physical and chemical properties of soybean,sunflower and palm oils in different containers, 4- Survey for determination of the keeping quality of some local andimported refined soybean, sunflower and palm oils, 5- Survey on oil samples used in frying, collected from differentresturants of ”Falafel”, The data and conclusion of the present study can be summarized as follow : 1- Effect of frying on the physico - chemical properties of the oils : A slight increase was observed in refractive index, acid value, peroxide value, anisidine value, thiobarbituric acid, color absorbance and saturated fatty acids. However the iodine value and unsaturated fatty acids decreased due to the saturation of double bonds by oxidation and polymerization which took place during frying. Addition of 200 ppmvitamin E to soybean oil decreased the rate of deterioration in physicaland chemical properties, compared with soybean oil without addition ofvitamin E.2- Storage : Refractive index, acid, peroxide, anisidine, thiobarbituric acid values, color absorbance, total saturated fatty acids and oleic acid increased during storage soybean, sunflower and palm oils in different containers stored in dark at room temperature, The highest increase in these values was observed in oil samples packed in polyethylene containers, while the least increase was obtainedin oil samples packed in clear plastic containers and palm oil packed inpolyethylene jars. The iodine value and linoleic acid decreased duringstorage, 3-Survey of oils used in frying : The results clearly demonstrated that the most of the oil samples collected from different resturants of ”Falafel” were over used or abused to high degree of deterioration. The extent of deterioration occurred dueto reusing oil for long periods at elevated temperatures, 4- Survey for determination of the keeping quality for samples local and imported soybean, sunflower and palm refined oils, Data indicated that soybean oil samples collected from four different companies were in accordance with FAO / WHO standards, except one sample had high peroxide value (12.88) meg/ kg. sunflower oil samples collected from five different compaines were in accordance with FAO/WHO standards except one sample contained high percentage of linolenic acid, 3.17% . FAa/WHO standards mentioned sunflower oil content of linolenic acid is not more than 0.7% . Palm oil samplescollected from five different companies were in accordance with .FAO /WHO except two samples had somewhat high peroxide value (10.30 and11.32 meg/kg), It may be concluded from this study.I) The oils must be not used in frying more than twice, afterwards it shall be changed with fresh refined oil, 2) Plastic bottles could be used for packaging soybean and sunflower oilsand polyethylene jars for palm oil,3) Palm oil was more stable against oxidation, 4) Soybean oil should be used before six months, Sunflower oil should used before nine months. Palm oil may used with one year.