

The Effect of Plantain Peel Extracts on the Oxidative Stability of Coconut and Sesame Oils and Their Blends During Deep Frying

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This study was conducted to evaluate the effect of plantain peel extract on the oxidative stability of coconut oil and sesame oil and their blends during frying and to compare with the effect of synthetic antioxidants; Butylatedhydroxy toluene (BHT). Three oil blends were prepared to contain different ratios (volume basis) of coconut oil and sesame oil such as 70:30 (blend 1), 50:50 (blend 2) and 30:70 (blend 3). Plantain peel extract was obtained using acetone as solvent. Extract was added at 800 ppm to the oils to determine the effect of addition of this extract on the oxidative stability of samples during frying. Oil samples without any added antioxidants was used as control. Frying experiment was carried out by frying uniformly sized potato slices at 170 ± 5 °C for 15 min (75ml of oil for 25 g of potato). The same oil samples were reused for two more frying cycle on every other day. Oils samples were tested for the oxidative stability (peroxide value, *p*-Anisidine value and 2-thiobarbituric acid reactive substances) and fatty acid composition (Gas-Liquid Chromatography). Oxidative stability of all samples decreased with increasing frying cycle. Coconut oil exhibited highest stability, while, sesame oil exhibited lowest stability. Blend 1 showed significantly higher level of stability than other blends. Samples added with plantain peel extract exhibited high stability than samples added with BHT. Small quantities of *trans* fats (0.02-0.04%) were produced in all blend 1 and blend 3 samples except the blend 2 added with peel extract. Further, plantain peel extract can be used as a potential source of natural antioxidants to improve the stability of edible oils against oxidation and as a replacement for synthetic antioxidant. Thus, it can be concluded that oil blend prepared from sesame oil (30%) and coconut oil (70%) could be used more effectively during frying in terms of its stability against oxidation than other blends and higher nutritional quality compared to raw oils.

Key words: Antioxidants, Banana peel extract, Butylated hydroxytoluene, Fatty acids