Thermal Stability of Soya Bean Oil and Palmolein Based Blends

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Blending of oils has been taken up as an alternative to improve the quality of frying oil and to reduce the detrimental effects of severely abused oil. The study of blending soya bean and palmolein with sesame oil in the ratios of 80:20 and 20:80 was taken up with pure sesame oil as control. For evaluation of frying performance, deep fat frying as in only at home level status of frying of “muruku” was conducted in each oil blend in four batches consecutively while maintaining frying temperatures at 180°C. The intermittent frying of muruku for each oil blend was performed and the oil samples for each batch of frying were withdrawn, cooled and poured into small vials and analysed for rancidity parameters by standardized methods.

Steady rise in all the rancidity parameters was observed in all the blends. Control had an acid value ranging from 3.55 to 4.87 and sesame-soya bean oils (80:20) showed an acid value ranging from 0.396 to 5.14 and 0.21 to 0.97 for its 20:80 blend for the four consecutive fryings respectively. For sesame-palmolein (80:20) the acid values ranged from 3.13 to 6.40 and for 20: 80 blend from 3.43 to 7.49 respectively. Control had an initial free fatty acid content of 1.78 and it increased to 2.45 for the 4^{th} frying. The free fatty acidity of all the blends registered a regular rise at intervals, which were very much significant in comparision to control. Peroxide value increased gradually in all the blends and control and the rise was transiently seen from 5.306 to 20.51 meq/kg. Small increases in para-anisidine value occurred for all the blends, and for control it was 3.78 to a maximum of 6.62. The increase in para- anisidine value was marginally higher in sesame–palmolein (20:80) from 2.12 to 10.266. The totox value of control increased from 14.396 to 47.64. Highest increase in totox value was seen in sesame-palmolein (80:20) from 20.073 to 65.103 followed by 20:80 blend of the same from 25.833 to 61.432. The thiobarbituric acid values were on the rise for all the blends studied and so where the Kries test values. All the blends showed an incipient rancidity by the end of the 3 rd frying.