

Comparative Study on Physicochemical Properties of Sunflower Oil, Palm Oil and Virgin Coconut Oil Available in Sri Lankan Market

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Sunflower oil (SO), palm oil (PO) and virgin coconut oil (VCO) are three different types of widely consumed edible oils, in Sri Lanka. At the time of purchasing the physicochemical parameters among the same oil type can be varied. The study was designed to evaluate the quality attributes of randomly picked oil samples in Sri Lankan local market at the moment of purchasing. Twelve samples (Three brands of SO, four brands of PO and five brands of VCO) of oils were purchased from the supermarkets in Badulla and Colombo area. Specific gravity, viscosity, colour, free fatty acid (FFA) and peroxide value (PV) of all the oil samples were measured. PV and FFA values of SO ranged from 14.80 ± 3.02 meq/kg to 7.67 ± 0.70 meq/kg and $0.86 \pm 0.30\%$ to $0.53 \pm 0.11\%$ respectively. The recorded PV values of some brands of SO are complying with the SLS standards and PV values of remaining brands and all FFA values are not complying with SLS standard (946: maximum FFA as oleic acid: 0.25% and maximum PV: 10 meq/kg). Specific gravity, viscosity and colour of the three brands of SO were significantly different ($P < 0.05$). PV and FFA of PO ranged from 0.36 ± 0.12 meq/kg to 0.25 ± 0.02 meq/kg and $11.13 \pm 1.43\%$ to $7.07 \pm 0.69\%$ respectively. Thus, the recorded PV and FFA of some brands comply with the SLS standards (720: maximum FFA as palmitic acid 0.25% and maximum PV: 10 meq/kg). The colour and specific gravity of PO were significantly different ($P < 0.05$) within the three brands but viscosity was not significantly different ($P > 0.05$). PV and FFA of VCO ranged from 3.07 ± 0.17 meq/kg to 2.27 ± 0.13 meq/kg and $0.31 \pm 0.03\%$ to $0.20 \pm 0.05\%$, respectively. Thus, the recorded PV values and FFA values are complied with some brands while some are not conformity with SLS standard (32:2002) (maximum FFA as lauric acid: 0.2% and maximum PV: 3 meq/kg). Values for specific gravity, colour and viscosity of three brands of VCO were not significantly different ($P < 0.05$). In conclusion, the physicochemical properties of some brands in three different oil types do not comply with the SLS standards and also show significant differences within the brands.

Keywords: Edible oil; Free fatty acid; Peroxide value; Sunflower oil

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