

Deep frying performance of enzymatically synthesised palm-based medium- and long-chain triacylglycerols (MLCT) oil blends

ABSTRACT

The main aim of this work was to assess the frying strength of the enzymatically synthesized palm-based medium- and long-chain triacylglycerols (MLCT) oil with the aid of different antioxidants under deep-frying conditions. Palm-based MLCT oil in the presence of synthetic or natural antioxidants showed significantly better ($P < 0.05$) thermal resistance and oxidative strength than refined, bleached, and deodorized (RBD) palm olein throughout the five consecutive days of frying. Rancimat induction period, free fatty acid content, anisidine value, $E1\%1\text{cm}$ at 232 and 268 nm, color, percentage of oil uptake, and viscosity measurement can be used as oil quality parameters to indicate the degree of oil deterioration under continuous stressed frying conditions. No significant changes ($P > 0.05$) in the saturated/unsaturated fatty acids ratio across frying periods indicated good oxidative stability of the palm-based MLCT oil. Due to the polarity of medium- and long-chain triacylglycerols in palm-based MLCT oil, total polar compounds determination may not be a suitable oil quality measure. Sensory evaluation of fried chips showed no significant differences ($P > 0.05$) between chips fried in RBD palm olein and palm-based MLCT oil over the 3-month storage period.

Keyword: Medium- and long-chain triacylglycerols; MLCT; Deep-fat frying; Oleoresin sage extracts; Tert-Butylhydroquinone; TBHQ; Refined; Bleached; Deodorized (RBD) palm olein