



IMPACT OF HEAT TREATING SESAME OIL UPON ITS COLOUR AND FREE FATTY ACID CONTENT

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Changes in colour and free fatty acid (FFA) content of crude and clear sesame oils upon heat treatment were investigated in this study. Crude sesame oil contained fine sediments. Gravity settling of sediments provided clear oil. Crude and clear oil samples were oven heated at two levels of temperatures (120°C and 200°C) and at two levels of heating durations (1 h and 4 h) in a 3-factor, 2-level full factorial design of experiment. Heat treated samples were cooled and centrifuged at 3500 rpm for 10 min. Colour was measured in a CIE L*a*b* scale using a UV-Vis Spectrophotometer. FFA was quantified using Sri Lankan Standard method 313/2.6:2009. FFA of clear oil did not undergo significant changes when heated for 1 h at 120°C. Heating the clear oil for 4 h or at 200°C and heating the crude oil at 120°C induced similar but restraint increment in FFA. FFA of crude oil increased significantly when heated at 200°C even for 1 h. L* colour index, measuring darkness (0) to lightness (100), decreased indicating the shift of oil colour towards darker shades with increasing heating temperature and duration. Observed changes in L* of crude oil, as in case of FFA, were significant, indicating the influence of sediments upon the colour and FFA of heated oil. A linear regression relationship between FFA and L* with normally distributed residuals was observed (R²= 69%). The said resistance to changes in colour and FFA of sesame oil during moderate heating may be attributed to the presence of its inherent antioxidants (sesamin and α -tocopherol) and to the formation of sesamol, a potent antioxidant, during moderate heat treatment of sesame oil. Prolonged heat treatment at elevated temperatures is known to destroy the antioxidants. Sesame oil is therefore recommended for application involving moderate heating of oil.

Keywords: *Colour, FFA, Heating, Sesame oil, Temperature*