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Optimization of Selected Parameters Influencing the Total Phenolic Content Determination of Sesame Oil

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Antioxidant activity of sesame (*Sesamum indicum* L.) oil can be assessed by determining its total phenolic content (TPC) using Folin-Ciocalteu reagent (FCR) method. Objective of this study was to optimize *V*, volume of FCR, *C*, concentration of sodium carbonate (SC) solution and *t*, incubation time, used for the determination of TPC of sesame oil since a standard method is not available for the said purpose. Methanol-water (80:20 v/v) extracts of freshly produced sekku-based sesame oil was used. TPC procedure adopted was as follows: 1 ml of the said extract was diluted with 5 ml of distilled water; *V* ml of FCR and 2 ml of *C* g/100 ml of SC solution were added; mixture was diluted with 1.5 ml distilled water and vortexed at 1600 rpm for 30 seconds; kept in dark for *t* h. Absorbance at 765 nm was measured using a UV-VIS Spectrophotometer (DR 6000™, HACH). Optimization of the parameters were carried out using a full factorial design of experiment with $V = 0.5$, 1.0 and 1.5 and $C = 7.5$, 10 and 20. Contour plot obtained with the resulting regression model featured a saddle point in the area enclosed by $V \approx 1.0$ to 1.5 and $C \approx 15$ to 20 for all *t* studied, and therefore this area shall be avoided in the TPC determination of sesame oil. Optimum values of *V*, *C* and *t* suggested by the results of this study are 0.5 ml, 20 g/100 ml, and 1.5 h.

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