

Application of Near Infra-Red (NIR) Spectroscopy to Quantify Fat and Total Solid Contents of Sweetened Condensed Creamer

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ABSTRACT: Near-infrared (NIR) spectroscopy has emerged in food industry as a rapid, non-destructive method in the quality analysis of food and beverages. The objective of the present study was to explore the applicability of NIR spectroscopy for rapid quantification of fat and total solid content of a dairy product, sweetened condensed creamer. Samples (30 for fat and 24 for total solids) were analyzed using NIR spectroscopy and standard methods. Opus spectroscopy software was used to develop calibration models for the components examined. The calibration models were prepared using spectra obtained for both fat and total solid content. The constructed calibration models were validated by cross validation. The correlation coefficients (R^2) between the values obtained from two methods were determined. The values obtained for fat and total solid contents by NIR spectroscopy and standard method were not significantly different ($p>0.05$). The R^2 values determined for calibration were, 0.91 for fat and 0.87 for total solids while R^2 values for validation were 0.96 for fat and 0.96 for total solids. The results of the present study showed a strong relationship between results obtained by NIR spectroscopy and respective standard methods. Thus, it can be concluded that NIR spectroscopy is applicable for a routine analysis of fat and total solid content of Sweetened Condensed Creamer.

Keywords: Fat, near infra-red (NIR) spectroscopy, sweetened condensed creamer, total solid

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