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**Figure S1: Raman spectra of milk after trimming to the region between 3100 cm-1 to 120 cm-1 subjected to Multiplicative Signal Correction.**

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Figure S2: CLA prediction using Raman spectra corrected by various methods. Minimum RMSECV values for the six strategies are 0.073 (20), 0.072 (20), 0.061 (18), 0.062 (19), 0.061 (16), 0.061 (14), respectively (number of components in parentheses). Corresponding RMSEP for the validation data are 0.075, 0.075, 0.062, 0.066, 0.061, 0.062.
SNV = standard normal variate, EMSC = extended multiplicative signal correction.

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Figure S3: Regression coefficient from PLS models predicting the Iodine number and CLA content, respectively. Models use to 10 and 9 components from data corrected by EMSC with 6th order polynomials plus replicate correction.



Figure S4: Fatty acid prediction from Raman spectra corrected using various methods
SNV = standard normal variate, EMSC = extended multiplicative signal correction. Abbreviations: SFA: Total saturated fatty acids (%); MUFA: Total monounsaturated fatty acids (%); PUFA: Total polyunsaturated fatty acids (%).

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**Figure S5: Regression coefficients from PLS models predicting fatty acid contents. Models use 10, 9, 6, and 14 components from data corrected by EMSC with 6th order polynomials and interferent spectrum.**