APPLICATION OF FTIR SPECTROSCOPY IN THE DETECTION OF FORMALDEHYDE IN LOCAL CHEESE

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Abstract- A new analytical method was developed for determining formaldehyde in cheese by FTIR spectroscopy. Formaldehyde was also spiked at 0 to 1000 mg/kg in freshly prepared cheese. FTIR spectra were recorded using Attenuated Total Reflectance (ATR) accessory at room temperature, and the Partial Least Squares (PLS) regression statistical method was used to derive calibration models for the set of samples in triplicates. The average standard error of calibration was 4.24 mg/100 g, with coefficients of determination (R2) of 0.9662. The calibration model was validated by the "leave-one-out" cross-validation method, and the R2 of validation, the standard errors of prediction, and SD of the differences for repeatability and accuracy were computed. The results support the premise that FTIR spectroscopy is an efficient, precise and rapid technique for the determination of minor components such as formaldehyde/formalin in cheese samples.

Keywords- ATR, Cheese, FTIR spectroscopy, Formaldehyde, PLS.