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C1988 THE POTENTIAL OF NEAR INFRARED SPECTROSCOPY AS A METHOD OF DETERMINATION OF THE FAT CONTENT IN YOGURT

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1 Keywords

NIRS, Partial least squares, Dairy

2 Introduction

Yogurt is a food product produced by fresh milk as the raw material which is easier to digest and assimilate than fresh milk. Today, it is a very popular food product and is marketed worldwide.Consequently, is important to know its chemical composition.

On the other hand, the use of near-infrared technologies is increasing in the last years as it is a fast and easy technique.Nevertheless, studies about its use in yogurts are limited.

3 Material and Methods

141 samples of yogurt were analysed by NIRS. The whole experiment was carried out at 20ºC. 75% of the samples were used for calibration set and the rest were used for validating this model.

A NIR Luminar 5030 Miniature “Hand-held” with a spectral range of 1100-2300 nm was used to obtain the spectra, with a sampling interval of 2 nm.

The software used for analysis was The Unscrambler. The predictive models were established by using partial least squares (PLS).

4 Results/Conclusions

The information that is used to predict the composition and quantities of the samples is contained into the spectral curves. The pivotal step for spectroscopy technique is to extract quantitative data from them. In this study, PLS algorithm was used to achieve this purpose.

87 samples were chosen as a calibration sample cluster, and PLS mathematic model was built by using NIR-spectroscopy and fat content of each sample (Fig.1). The correlation coefficient between spectral data and fat content of yogurt was 0.965, the standard error of calibration (SEC) was 0.587, and the standard error of prediction (SEP) was 0.642. The fat content of another 33 samples was predicted by a mathematical model (Fig.2). The correlation coefficient of linear regression between predicted and measured values shows a reasonable to excellent prediction performance of 0.929.

In conclusion, the results indicated that NIRS could quantitatively analyze fat content of yogurt in a fast and non-destructive way.

5 Acknowledgements/References