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Title: Changes in the Acid Value of Butter During Storage at Different Temperatures as Assessed by Standard Methods or by FT-IR Spectroscopy

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Abstract: Three different types of polish commercial butters, namely: light, regular and high fat content were under study. Studied samples were stored at two different temperatures (5 or 20°C) for a period of 8 weeks. Measurements of the content of fat, water, Acid Value (AV) and Peroxide Value (PV) were determined in the fresh butter and at one week interval. The AV and PV were determined by the conventional titrimetric method. IR spectra of every sample were registered. The relation between the AV values obtained by titration and by spectral measurements were studied by the Partially Least Square (PLS) regression, to built a statistical model for rapid determination of acid value. Two independent models, one for light type butters (model I) and the second one for regular and high fat content butters (model II) were calibrated. The characteristic parameters of the models are:  $R^2 = 0.97$ , PRESS (Prediction Residual Error Sum of Squares) = 2.91, factors number = 5 and  $R^2 = 0.84$ , PRESS = 3.64, factors number = 6, for model I and model II, respectively. The developed models correctly predict acid values of unknown samples of different types of butters.

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