

Quantification of aspartame in commercial sweeteners by FT-Raman spectroscopy.

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Streszczenie

Efficient methods are proposed herein for the quantification of aspartame in commercial sweeteners. These methods are based on a treatment of Raman data with partial least squares (PLS), principal component regression (PCR) and counter-propagation artificial neural networks (CP-ANN) methods. For the three chemometric techniques used, the relative standard errors of prediction (RSEP) calculated for calibration and validation data sets were on the order of 1.8–2.2%. Four commercial preparations containing between 17% and 36% of aspartame by weight were evaluated by applying the developed models. Concentrations found from the Raman data analysis agree perfectly with the results of the UV–Vis reference analysis, with the recoveries in the 98.7–100.8%, 98.6–101.1% and 97.8–102.2% ranges for the PLS, PCR and CP-ANN models, respectively. The proposed procedures can be used for routine quality control during the production of commercial aspartame sweeteners.

Słowa kluczowe

Aspartame, Sweeteners, quantitative analysis, FT-Raman, chemometrics, Artificial neural networks

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