

Quantitative determination of acetylsalicylic acid and acetaminophen in tablets by FT-Raman spectroscopy.

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Rok wydania

2002

Czasopismo

Analyst

Numer woluminu

127

Strony

144-148

DOI

10.1039/b108240j

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

A procedure for quantitative determination of acetylsalicylic acid and acetaminophen in pharmaceuticals by PLS (partial least squares) and PCR (principal component regression) treatment of FT (Fourier transform)-Raman spectroscopic data is proposed. The proposed method was tested on powdered samples. Three chemometric models were built: the first, for samples consisting of an active substance diluted by lactose, starch and talc; the second, in which a simple inorganic salt was applied as an internal standard and additions were not taken into account; and the third, in which a model was constructed for a commercial pharmaceutical, where all constituents of the tablet were known. By utilising selected spectral ranges and by changing the chemometric conditions it is possible to carry out fast and precise analysis of the active component content in medicines on the basis of the simplified chemometric models. The proposed method was tested on five commercial tablets. The results were compared with data obtained by intensity ratio and pharmacopoeial methods. To appraise the quality of the models, the relative standard error of predictions (RSEPs) were calculated for calibration and prediction data sets. These were 0.7-2.0% and 0.8-2.3%, respectively, for the different PLS models. Application of these models to the Raman spectra of commercial tablets containing acetylsalicylic acid gave RSEP values of 1.3-2.0% and a mean accuracy of 1.2-1.7% with a standard deviation of 0.6-1.2%.

Adres publiczny

<http://doi.org/10.1039/b108240j>

Strona internetowa wydawcy

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