

Stability Indicating PLS and PCR Chemometric Methods for the Determination of Rosuvastatin in Presence of its Two Oxidative Degradation Products

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Abstract

Two multivariate calibration methods, including principal component regression (PCR) and partial least square (PLS), have been used for the determination of rosuvastatin in the presence of its oxidative degradation products. The PCR and PLS techniques are useful in spectral analysis due to the simultaneous inclusion of many spectral wavelengths instead of the single wavelength used in derivative spectrophotometry, thus a great improvement in the precision and predictive abilities of these multivariate calibrations is observed. A calibration set was constructed for the mixture and the best model was used for the prediction of the concentration of the selected drug. The proposed procedures were applied successfully in the determination of rosuvastatin in laboratory-prepared mixtures and in commercial preparations. Rosuvastatin was analyzed with mean accuracies 99.93 ± 0.866 and 99.99 ± 0.645 using the PCR and PLS methods respectively. The validity of the proposed methods was assessed using the standard addition technique. The proposed procedures were found to be rapid and simple and required no preliminary separation. They can therefore be used for the routine analysis of rosuvastatin in quality-control laboratories.

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