Smart spectral processing of data for the estimation of commonly used over the counter (OTC) co-formulated; Pseudoephedrine hydrochloride and Ibuprofen

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Abstract

Oral pharmaceutical preparation containing pseudoephedrine hydrochloride (PSE) and ibuprofen (IBU) is widely prescribed as over- the- counter (OTC) for treatment of common cold-sinus. Development of four precise and accurate spectrophotometric methods are established for the concurrent determination of (PSE) and (IBU)in this preparation exploiting zero and/or ratio spectra. Method I is a dual wavelength method (DW). method II is a ratio difference method (RD), method III is a constant multiplication coupled with spectrum subtraction method (CM-SS) and method IV is a constant center coupled with spectrum subtraction method (CC-SS). While, absorbance correction method (AC) is successfully established for the determination of (IBU) only exploiting zero order absorption spectra. The calibration curves are linear over the concentration range of 100.0ï 900.0¡ɛg/mL for (PSE) and 200.0ï1000.0¡ɛg/mL for (IBU). No separation steps are required for the spectrophotometric procedures which augments their simplicity. Analyzing synthetic mixtures of the cited drugs evaluated the specificity of the applied methods. Validation of the analysis results have been statistically performed confirming the accuracy and reproducibility of the proposed method through recovery studies which were carried out by following ICH guidelines. Thus, the developed methods can be successfully applied routinely in quality control laboratory.

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