Spectrophotometric resolution of the severely overlapped spectra of clotrimazole with dexamethasone in cream dosage form by mathematical manipulation steps

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Abstract

Several spectrophotometric techniques were recently conducted for the determination of binary mixtures of clotrimazole (CLT) and dexamethasone acetate (DA) without any separation procedure. The methods were based on generation of ratio spectra of mixture then applying simple mathematic manipulation. The zero order absorption spectra of both drugs could be obtained by the constant center (CC) method. The concentration of both CLT and DA could be obtained by constant value via amplitude difference (CV-AD) method depending on ratio spectra, Ratio difference (RD) method where the difference between the amplitudes at two wavelengths (φP) on the ratio spectra could eliminate the contribution of the interfering substance and bring the concentration of the other, and the derivative ratio (DD1) method where the derivative of the ratio spectra was able to determine the drug of interest without any interference of the other one. While the concentration of DA could be measured after graphical manipulation as concentration using the novel advanced concentration value method (ACV). Calibration graphs were linear in the range of 75ï550¡εg/mL for CLT and 2ï20¡ εg/mL for DA. The methods applied to the binary mixture under study were successfully applied for the simultaneous determination of the two drugs in synthetic mixtures and in their combined form Mycuten-D cream. The results obtained were compared statistically to each other and to the official methods.

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