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Hayam M. Lotfy, Sarah S. Saleh



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Testing the purity of spectral profiles: Finger-print resolution of complex matrices and extraction of absorbance signals

Hayam M. Lotfy ^{a,b}, Sarah S. Saleh ^{c*}

^a *Analytical Chemistry Department, Faculty of Pharmacy, Cairo University, Kasr-El Aini Street, 11562 Cairo, Egypt*

^b *Pharmaceutical Chemistry Department, Faculty of Pharmaceutical Sciences & Pharmaceutical Industries, Future University in Egypt, 12311, Cairo, Egypt*

^c *Analytical Chemistry Department, Faculty of Pharmacy, October University for Modern Sciences and Arts (MSA), 11787 6th October, Egypt.*

**Corresponding author, e-mail: drsarahsalah@gmail.com*

Abstract

The application of spectrophotometric techniques has shown a tremendous development over the past few years, where it is possible to determine the concentrations of several components in complex matrix. A new feature will be introduced in this work where the application of spectrophotometric techniques will be enhanced to resolution and checking the purity of signals. The finger-print resolution “ratio subtraction method” (*RSM*) was coupled with the novel complementary method “unified constant subtraction” (*UCS*); in addition to the methods: extended ratio subtraction method (*EXRSM*), constant multiplication (*CM*) or “spectrum subtraction” (*SS*). These techniques were applied for the determination of the complex matrix of the binary mixture of chloramphenicol and dexamethasone. By applying official spectrophotometric methods, direct determination of the components was allowed with no need for validation procedures. The spectrophotometric techniques were successfully applied to the laboratory prepared mixtures and the combined dosage form where the purity of the extracted signals were tested by calculating the spectral contrast angle (Θ) and the spectral ratio factor (*SRF*) where the results were compared to show the capability to recover pure spectral profiles

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