Comparative study of novel versus conventional two-wavelength spectrophotometric methods for analysis of spectrally overlapping

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Abstract

Smart spectrophotometric methods have been applied and validated for the simultaneous determination
of a binary mixture of chloramphenicol (CPL) and prednisolone acetate (PA) without preliminary separation.
Two novel methods have been developed; the first method depends upon advanced absorbance
subtraction (AAS), while the other method relies on advanced amplitude modulation (AAM); in addition
to the well established dual wavelength (DW), ratio difference (RD) and constant center coupled with
spectrum subtraction (CCïSS) methods. Accuracy, precision and linearity ranges of these methods were
determined. Moreover, selectivity was assessed by analyzing synthetic mixtures of both drugs. The proposed
methods were successfully applied to the assay of drugs in their pharmaceutical formulations. No
interference was observed from common additives and the validity of the methods was tested. The
obtained results have been statistically compared to that of official spectrophotometric methods to give
a conclusion that there is no significant difference between the proposed methods and the official ones
with respect to accuracy and precision.

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