

SEPARATION AND DETERMINATION OF BETAMETHASONE AND CHLORAMPHENICOL IN MULTICOMPONENT PHARMACEUTICAL PREPARATIONS USING A MONOLITHIC COLUMNS COUPLED TO SEQUENTIAL INJECTION SYSTEM

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Abstract

A new separation method based on a reversed-phase sequential injection chromatography (SIC) technique was used for simultaneous determination of chloramphenicol and betamethasone in pharmaceutical eye drops in this contribution. Short monolithic column coupled with a sequential injection analysis (SIA) system enabled separation of two compounds in one step.

A Chromolith[®] Flash RP-18e, 25-4.6 mm column with 5 mm precolumn (Merck, Germany) and a FIALab[®] 3000 system (USA) with a 6-port selection valve and 5 ml syringe were used for sequential injection chromatographic separations in study. The mobile phase used was acetonitrile–water (30:80, v/v), flow rate 0.48 ml min⁻¹; UV detection was at two wavelengths 241 nm and 278 nm, (absorption maximum of betamethasone and chloramphenicol).

The basic validation parameters showed good results: linearity of determination for both compounds including internal standard (propylparaben) > 0.999; repeatability of determination (RSD) in the range 0.8 – 1.7% at two different concentration levels, and detection limits in the range 0.5 – 1.0 µg ml⁻¹. The chromatographic resolution between peak compounds was greater than 2.1 and analysis time was less than 8 min under the optimal conditions. The developed SIC method was compared with HPLC method and it was found to be applicable for routine analysis of the active compounds in the pharmaceutical preparations.