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(57) Abstract :
UV SPECTROPHOTOMETRIC QUANTIFICATION OF CPM IN THE TABLET FORMULATION USING CHEMOMETRIC APPROACH ABSTRACT In recent research, the Quality by Design (QbD) chemometric approach was applied to establish and validate a robust, precise, and consistent spectrophotometric method for the quantification of Chlorpheniramine Maleate (CPM) in tablet formulations. A fractional factorial design (FFD) was used for the initial parameter assessment. Subsequently, the selected variables were subjected to a central composite design (CCD) for further evaluation and optimization of the method. Various statistical tools were employed to evaluate the compatibility of the collected data. CPM displayed peak absorption at 262 nm when interfaced with HCl. Critical method variables identified were slitwidth and sampling interval, which were further analyzed using CCD. Strong linearity was observed for CPM in the range of 2-12µg/mL with an R2 value exceeding 0.9995. The technique showed high accuracy, with an average % recovery exceeding 100%. After refining, the method was validated following ICH guidelines. By employing QbD principles, the spectrophotometric method inherently ensured quality. The final method was determined to be robust and suitable for quantifying CPM in pharmaceutical formulations.

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