

SIMULTANEOUS QUANTIFICATION OF PARACETAMOL, GUAIFENESIN AND PHENYLEPHRINE HYDROCHLORIDE BY STABILITY-INDICATING RP-HPLC IN PHARMACEUTICAL TABLETS

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ABSTRACT

A simple, accurate, and precise reverse-phase high-performance liquid chromatography method was developed for simultaneously estimating paracetamol, guaifenesin, and phenylephrine hydrochloride in a combined dosage form. An Inertsil ODS-3V C18 column (250 mm × 4.6 mm, 5 µm) was used to separate the samples. The mobile phase was a gradient of phosphate buffer (pH 3.0) and acetonitrile. The flow rate was 1.0 mL min⁻¹, and the detection was done at 220 nm. Paracetamol, guaifenesin and phenylephrine HCl had retention times of approximately 3.84, 8.99 and 5.85 minutes, respectively. The method was linear for paracetamol, guaifenesin, and phenylephrine HCl over the ranges of 51.2–76.8 µg mL⁻¹, 32–60 µg mL⁻¹, and 16–24 µg mL⁻¹, with correlation coefficients of 0.999 or higher for all analytes. The analytes exhibited average recoveries between 98.3 % and 101.6 %. The proposed method was validated in line with ICH guidelines and effectively utilized on a synthetic mixture of the analytes.