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UV Visible Spectroscopy : Analytical Technique for Measuring Paracetamol Drug Concentration and Evaluation its Stability Over Time

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Abstract: *Paracetamol (acetaminophen) is a widely used analgesic and antipyretic drug. Monitoring its concentration and evaluating its stability are essential for ensuring therapeutic efficacy and safety. UV-visible (UV-Vis) spectroscopy has emerged as a convenient, cost-effective, and reliable analytical technique for this purpose. This review explores the principles of UV-Vis spectroscopy in relation to paracetamol analysis, recent advances in analytical protocols, and methodologies to assess the stability of paracetamol under various environmental and storage conditions.*

Pharmaceutical analysis plays a critical role in ensuring the safety, efficacy, and quality of drug substances and products. Among the various analytical techniques used in pharmaceutical quality control, UV-visible spectroscopy is one of the most widely employed due to its simplicity, accessibility, and cost-effectiveness. This review focuses on the use of UV-visible spectroscopy as a method for determining the concentration of paracetamol (acetaminophen) in pharmaceutical formulations, and for evaluating its stability under various environmental and storage conditions over time.

Paracetamol is a commonly used analgesic and antipyretic drug. Its widespread use across over-the-counter (OTC) medications and prescription formulations necessitates rigorous testing to ensure batch-to-batch consistency and to detect any degradation or loss of potency during its shelf life. Stability testing is equally important to determine the impact of environmental factors such as temperature, humidity, light, and pH on the chemical integrity of paracetamol.

Keywords: Paracetamol

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