

# Application of Chemometrics in Optimizing Drug Analysis Methods

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**Abstract:** Chemometrics has emerged as an indispensable tool in pharmaceutical analysis, enabling the optimization of analytical methods, reduction of experimental trials, and improvement of data interpretation. By integrating statistical and mathematical techniques, chemometrics enhances method development, validation, and quality control in drug analysis. This review discusses the principles of chemometrics, its application in various analytical techniques, and its role in optimizing chromatographic, spectroscopic, and hyphenated methods for pharmaceuticals. A summary of relevant studies, advantages, and challenges is also provided.

**Keywords:** Chemometrics, Multivariate Analysis, Pharmaceutical Analysis