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An Innovative Reversed Phase High-performance Liquid hromatography (Rp-hplc) Technique Designed for Concurrent Estimation Pertaining to Nebivolol Hydrochloride in Conjunction With Hydrochlorothiazide During Pharma-related Pharmaceutical Preparations

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The aim of this study was to design, optimize, and evaluate Nevirapine extended-release tablets (100 mg/400 mg) to enhance the therapeutic efficacy and patient compliance in the treatment of HIV/AIDS.The objective was to develop a controlled-release formulation of Nevirapine that maintains plasma drug concentrations within the therapeutic window over an extended period, while minimizing side effects and improving patient adherence to the treatment regimen.Nevirapine extended-release tablets were formulated using a combination of hydrophilic and hydrophobic polymers to control the drug release rate. The design of the formulation was based on a factorial design approach to optimize factors such as the type and concentration of polymers, granulation method, and compression force. The tablets were prepared by direct compression, and their release characteristics were evaluated using USP dissolution apparatus II in simulated gastric fluid (SGF) and simulated intestinal fluid (SIF). The release profiles were analyzed using the Korsmeyer-Peppas model to determine the release mechanism. The process design, optimization, and evaluation of Nevirapine extended-release tablets were successfully carried out, and the optimized formulation demonstrated controlled drug release over 24 hours. This formulation is expected to improve therapeutic outcomes by providing consistent drug delivery, minimizing side effects and enhancing patient compliance.The optimized formulation exhibited a sustained release profile with a release rate of approximately 90% of the drug over 24 hours, maintaining a steady plasma concentration within the therapeutic range. The tablets showed minimal fluctuations in drug release, with a zero-order release pattern being observed. Evaluation parameters such as hardness, friability, and drug content uniformity met the official pharmacopoeial standards. Stability studies conducted at accelerated conditions indicated that the formulation remained stable with no significant degradation of Nevirapine .

Biography

P.Krishnaveni has her own experience in valuation and passion for ML and data. The research team built this model after many years of experience in research, evaluation, work in both hospitals and scientific laboratories. This approach meets all the requirements for precise, specific, sensitive diagnostics. .

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