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# TO DEVELOP AND VALIDATE AN EFFECTIVE UPLC METHOD FOR THE DETERMINATION OF DARUNAVIR AND COBICISTAT IN BULK AND MULTI BRANDED FORMULATIONS

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**Abstract**

A simple, rapid, precise, sensitive and reproducible reverse phase high performance liquid chromatography (UPLC) method has been developed for the quantitative analysis of Darunavir and Cobicistat in pharmaceutical dosage form. Chromatographic separation of Darunavir and Cobicistat was achieved on Waters Acquity UPLC system, by using Waters X-bridge C8 100 x 3.0mm, 3.5µ column and the mobile phase containing 0.1% TFA & ACN in the ratio of 40:60% v/v. The flow rate was 1.0 ml/min; detection was carried out by absorption at 257nm using a photodiode array detector at ambient temperature. The number of theoretical plates and tailing factor for Darunavir and Cobicistat were NLT 2000 and should not more than 2 respectively. % Relative standard deviation of peak areas of all measurements always less than 2.0. The proposed method was validated according to ICH guidelines. The method was found to be simple, economical, suitable, precise, accurate & robust method for quantitative analysis of Darunavir and Cobicistat and study of its stability.

**Keywords** : UPLC Darunavir and Cobicistat

**Biography**

Revathi. N 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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# FORMULATION DEVELOPMENT AND INVITRO EVOLUTION OF SUSTAINED RELEASE VERAPAMIL HCL MATRIX RELEASE TABLETS BY USING DIFFERENT NATURAL POLYMERS

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## Abstract

Various natural polymers will be used in the formulation and evaluation of the sustained release (SR) matrix tablets of Verapamil Hydrochloride (HCl) in this study to provide controlled drug release over a longer period of time. Verapamil HCl, a calcium channel blocker with a short half-life, requires frequent dosing, which can be overcome by developing sustained release formulations. Due to their biocompatibility, non-toxicity, and capacity to regulate drug release, natural polymers like Okra gum, Xanthan gum, and Guar gum were chosen as matrix-forming agents. The sustained release matrix tablets were prepared using the wet granulation method and subjected to various pre-compression and post-compression evaluation parameters, including flow properties, hardness, friability, weight variation, drug content, and swelling index. In-vitro drug release studies were conducted using USP dissolution apparatus in 0.1N HCl and phosphate buffer pH 7.4 to simulate gastrointestinal conditions.The results revealed that formulations containing Okra gum and Xanthan gum in optimized concentrations showed sustained drug release up to 12 hours with controlled swelling behavior, adhering to zero-order and Higuchi kinetics, suggesting diffusion as the primary mechanism of release. Among all formulations, the combination of natural polymers provided a synergistic effect, significantly retarding drug release compared to single polymer systems.The study came to the conclusion that natural polymers are promising excipients for the development of Verapamil HCl sustained release matrix tablets because they provide advantages such as decreased dosing frequency, increased patient compliance, and pharmacokinetic profiles that are predictable.

**Keywords:** Verapamil Hydrochloride, Sustained Release, Natural Polymers, Okra Gum, Xanthan Gum, Guar Gum, Matrix Tablets, Controlled Drug Delivery, In-vitro Evaluation, Release Kinetics.

**Biography**

Santhoshi.L 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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