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Formulation and Optimization of Effervescent Tablets by DOE

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Abstract: *Effervescent tablets are a popular dosage form known for their ease of administration, particularly for patients who have difficulty swallowing conventional tablets. The objective of this study was to formulate and evaluate Cefdinir effervescent tablets using the principles of the Design of Experiments (DOE). Cefdinir is a third-generation cephalosporin antibiotic, commonly used to treat bacterial infections, but it faces challenges in oral bioavailability due to poor solubility. The formulated tablets were evaluated for their physical and chemical properties, including hardness, friability, weight variation, and dissolution rate, using standard pharmacopeial methods. In addition, the optimization of formulation parameters was analyzed through statistical analysis to identify the most influential factors and their interactions. The outcome of this study was the identification of an optimal formulation for Cefdinir effervescent tablets, providing enhanced solubility and faster onset of action, which is essential for improving patient compliance and therapeutic efficacyIn conclusion, the application of DOE in the development of Cefdinir effervescent tablets allowed for a systematic approach to optimize the formulation, resulting in a high-quality dosage form with improved drug release and stability profiles. This study highlights the importance of formulation design in the development of novel drug delivery systems and the potential benefits of effervescent tablets in enhancing the therapeutic performance of antibiotics like Cefdinir*

Keywords: Cefdinir, Effervescent Tablets, Optimization, Dissolution Rate, Bioavailability, Excipients