

Recent Developments in Floating Tablets: Formulation, Evaluation, and Future Prospects

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Abstract: Floating tablet technology has emerged as a promising approach in the field of drug delivery, offering unique advantages in controlled release, enhanced bioavailability, and improved patient compliance. This comprehensive review examines the formulation strategies, evaluation methods, recent advancements, and future prospects of floating tablets. The introduction delves into the definition and significance of floating tablets, outlining their role in overcoming physiological challenges related to gastric retention and controlled drug release. A historical overview traces the evolution of floating tablet technology, elucidating its evolution from conventional dosage forms to innovative gastroretentive systems. The review discusses the physiology of gastric emptying, factors influencing it, and the pivotal role of gastric retention in augmenting drug bioavailability. Mechanisms and designs of floating tablets encompass non-effervescent, effervescent, and mucoadhesive systems, exploring their formulation approaches and polymer selections. Formulation development strategies cover various manufacturing techniques, optimization methods for drug release kinetics, and challenges encountered during formulation development. It delves into drug release studies, in vitro-in vivo correlations, and the impact of formulation variables on drug release and bioavailability. Additionally, the review highlights the applications and therapeutic significance of floating tablets in treating specific disease conditions through case studies and outlines future prospects and emerging trends in clinical applications. Regulatory considerations, approval processes, and commercialization aspects are discussed, emphasizing the necessity of compliance with regulatory guidelines for successful market entry. This review consolidates the diverse facets of floating tablet technology, providing insights into its formulation, evaluation, applications, regulatory challenges, and potential advancements in pharmaceutical formulations.

Keywords: Floating tablets, Controlled release, Gastroretentive, Drug delivery, Formulation, Gastric retention, Polymer matrices, Bioavailability

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