

# Advancements in Floating Tablets: A Comprehensive Review

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**Abstract:** Floating tablet technology represents a remarkable advancement in oral drug delivery systems aimed at enhancing drug bioavailability and therapeutic efficacy. This comprehensive review delves into the multifaceted aspects of floating tablets, focusing on their design, formulation strategies, applications, regulatory considerations, and future prospects in pharmaceutical formulations.

The review commences with an exploration of the definition and significance of floating tablets, elucidating their role in ensuring prolonged gastric residence time and controlled drug release. It navigates through the historical evolution of floating tablet technology, encompassing diverse approaches such as non-effervescent, effervescent, and mucoadhesive systems, offering insights into their mechanisms and design rationale.

Formulation development strategies involving various manufacturing techniques, optimization methods for drug release kinetics, and buoyancy, along with challenges and solutions encountered, are meticulously examined. Additionally, the review highlights the critical evaluation of drug release from floating tablets, in vitro-in vivo correlation studies, and the impact of formulation variables on drug release and bioavailability.

Furthermore, it delineates the therapeutic significance of gastric retention systems, showcasing disease conditions benefiting from floating tablets and exemplifying successful case studies in clinical applications. Regulatory considerations, encompassing guidelines, safety, efficacy assessments, and strategies to overcome regulatory challenges for commercialization, are comprehensively addressed.

The review culminates by summarizing key findings and advancements in floating tablet technology, addressing challenges, outlining future directions in research and development, and emphasizing the profound potential impact of floating tablets in revolutionizing pharmaceutical formulations. This in-depth exploration accentuates the promising prospects and transformative impact of floating tablet technology in enhancing drug delivery and patient care.

**Keywords:** Floating tablets, drug delivery, gastric retention, controlled release, formulation development, in vitro-in vivo correlation, regulatory considerations, and therapeutic applications

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