IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 4, May 2025
Impact Factor: 7.67

Floating Tablets: A Novel Strategy for Prolonged Gastric Residence and Site-Specific Drug Delivery

Miss. Payal Gajanan Wade and Dr. Pankaj M. Pimpalshende
Hi-Tech College of Pharmacy, Morwa, Chandrapur, India

Abstract: *Oral drug delivery remains the most preferred route of administration due to its convenience, patient compliance, and cost-effectiveness. However, conventional oral dosage forms often face limitations, such as short gastric residence time and erratic absorption, especially for drugs with a narrow absorption window or poor stability in the intestinal environment. To overcome these challenges, gastroretentive drug delivery systems (GRDDS) have been developed to prolong gastric residence and improve drug bioavailability. Among these, floating tablets represent a promising strategy owing to their ability to remain buoyant on gastric fluids, thereby enhancing site-specific delivery and controlled drug release. Floating drug delivery systems (FDDS) are categorized into effervescent and non-effervescent systems based on their buoyancy mechanisms. Their formulation involves careful selection of drug candidates, polymers, gas-generating agents, and tablet technologies such as single-layer, bilayer, and multiparticulate systems. Various in vitro evaluation parameters, including buoyancy lag time, total floating duration, swelling index, and drug release profiles, are used to characterize these systems. Pharmacokinetic studies demonstrate improved bioavailability for several drugs delivered via floating tablets. Clinically, these systems have shown promise in the treatment of gastrointestinal disorders like peptic ulcers, GERD, and Helicobacter pylori infections. Recent advances include the use of novel biodegradable polymers, 3D printing techniques, and smart floating systems integrated with targeted and personalized drug delivery technologies. Despite physiological and manufacturing challenges, floating tablets continue to evolve as a reliable approach for enhanced therapeutic efficacy and patient-centric care in oral drug delivery.*

Keywords: Floating tablets, gastroretentive systems, effervescent systems, drug bioavailability, gastric retention, controlled release, 3D printing, smart drug delivery

DOI: 10.48175/568