

Chapter 6. Formulation And Evaluation of Floating Tablets

Bhoir Rumani Mohan¹, Arote Rutuja Dnyaneshwar¹, Bhor Snehal Sopan¹, Bandkar Ashwini Anantha¹, Rahinj Rutuja Karbhari¹

¹Department of Pharmaceutics, SGMSPM's Sharadchandra Pawar College of Pharmacy, Dumbarwadi (Khamundi), Tal- Junnar, Dist.-Pune, Maharashtra, India, 410504.

ABSTRACT:

Floating tablets are an innovative form of oral controlled drug delivery designed to remain buoyant in the stomach for prolonged periods. By staying afloat on gastric fluids, they enhance the bioavailability and therapeutic effectiveness of drugs absorbed from the upper gastrointestinal tract. These tablets are formulated using polymers such as HPMC, carbopol, and sodium alginate, along with effervescent agents like sodium bicarbonate and citric acid to create gas for buoyancy. They offer advantages such as prolonged gastric retention, controlled drug release, reduced dosing frequency, and improved patient compliance. This chapter discusses formulation principles, mechanisms of floatation, evaluation parameters, and recent innovations like multiple-unit floating systems and mucoadhesive floating forms. Overall, floating tablets represent a modern and effective approach to achieving sustained, site-specific drug delivery and improving therapeutic outcomes.

Keywords: Floating tablets, Gastric retention, Effervescent agents, Controlled drug release, Polymers (HPMC, Carbopol, Sodium alginate), Bioavailability

INTRODUCTION

Oral administration is the most common, convenient, and widely accepted route for drug delivery due to its simplicity, patient compliance, and cost-effectiveness. However, one of the major limitations of conventional oral dosage forms is their short gastric residence time, which often leads to incomplete drug absorption and reduced therapeutic efficiency. To overcome this drawback, gastroretentive drug delivery systems (GRDDS) have been developed to prolong the retention of dosage forms in the stomach, thereby enhancing drug absorption in the upper gastrointestinal tract. Among the various GRDDS, floating drug delivery systems (FDDS) have gained significant attention for their ability to remain buoyant on gastric fluids for several hours without affecting the gastric emptying rate. Floating tablets, a key type of FDDS, are formulated using low-density polymers and gas-generating agents to achieve buoyancy. These systems allow the drug to be released slowly and continuously, maintaining steady plasma concentrations and minimizing side effects.

Floating tablets are particularly beneficial for drugs that are unstable or poorly soluble in the intestinal environment and for those that are absorbed primarily from the stomach or upper small intestine. This innovative approach not only improves bioavailability and therapeutic efficiency but also contributes to better patient compliance by reducing dosing frequency. Thus, floating tablets represent a modern advancement in the design of controlled and site-specific drug delivery systems aimed at achieving optimal therapeutic outcomes.