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Fast Dissolving Tablets: A Novel Approach in Oral Drug Delivery

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Abstract: *Fast Dissolving Tablets (FDTs) represent a novel and promising approach in oral drug delivery, designed to rapidly dissolve or disintegrate in the mouth without the need for water. This drug delivery system provides significant benefits over conventional tablets and capsules, including improved patient compliance, especially for pediatric, geriatric, and dysphagic patients. FDTs are designed to enhance the solubility, bioavailability, and onset of action of various drugs, making them ideal for conditions requiring rapid therapeutic intervention. The formulation of FDTs involves innovative techniques such as direct compression, lyophilization, sublimation, and spray drying, aimed at achieving rapid disintegration while maintaining mechanical strength and stability. These tablets offer an ideal solution for patients who have difficulty swallowing, providing ease of administration and enhancing the patient experience. However, challenges remain in terms of taste masking, moisture sensitivity, and mechanical strength. Recent advancements in nanotechnology, 3D printing, and personalized medicine are expected to further improve the efficacy and customization of FDT formulations. Additionally, evolving regulatory frameworks are essential for ensuring the safety, efficacy, and consistency of these novel formulations. This review highlights the key aspects of FDT development, including formulation strategies, evaluation methods, and emerging trends, while also discussing their clinical applications, advantages, limitations, and future prospects in the pharmaceutical industry.*

Keywords: Fast Dissolving Tablets, Oral Drug Delivery, Patient Compliance, Drug Release, Nanotechnology, 3D Printing, Formulation Techniques, Personalized Medicine

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