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Development of Liposomal Drug Delivery System for Improved Bioavailability of Poorly Soluble Drugs : A Review

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Abstract: *Poor aqueous solubility remains one of the primary obstacles in contemporary drug development. A significant proportion of newly discovered therapeutic agents exhibit low water solubility, resulting in poor dissolution, limited absorption, and reduced oral bioavailability. Liposomal drug delivery systems have emerged as a promising approach to address these challenges. Liposomes are phospholipid-based vesicular carriers capable of encapsulating both hydrophilic and lipophilic drugs, thereby enhancing solubility, stability, and therapeutic performance. This review discusses the structural characteristics of liposomes, mechanisms involved in bioavailability enhancement, preparation techniques, characterization parameters, applications in poorly soluble drugs, advantages, limitations, and recent advancements. Liposomal technology continues to play a critical role in improving the pharmacokinetic and pharmacodynamic profiles of poorly soluble therapeutic agents.*

Keywords: Liposomes, Bioavailability, Poorly soluble drugs, Nanocarriers, Phospholipid vesicles, Drug delivery

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