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Formulation and Route of Administration—Influencing Drug Permeability and Absorption

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Drug efficacy, and to some degree minimization of toxicity, is predicated on appropriate formulation and delivery to the required site of action via the systemic circulation. A drug delivery system that contains a drug or a combination of drugs with excipients is formulated in such a way that it releases drugs in a desired manner at the required site. The performance of a drug delivery system depends upon the nature and amount of excipients used, method of preparation, and the route of administration. The drug delivery system is required to be safe, effective, and reliable for an optimum therapeutic response. An important consideration for the delivery of drugs to systemic circulation is its route of entry in the body. A drug can be administered by non-invasive routes such as oral, transdermal, ocular, nasal, pulmonary, vaginal, and rectal routes, or by invasive routes such as implants or injections that are intravenous, intramuscular, subcutaneous, intradermal, and intrathecal. This chapter is intended to provide an introduction to the challenges associated with the development and preclinical evaluation

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