

Description on Various Methods of Drug Delivery **Dongley chao***

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Description

The effectiveness of a drug can be greatly affected by the route of its administration. It is now possible to better control the pharmacokinetics, pharmacodynamics, toxicity, immunogenicity and effectiveness of drugs by creating a variety of Drug Delivery Systems (DDSs).

Route of administration is Via many different pathways, drugs can be administered into the body. In general, these routes are categorised by their "initial point" the position where the medication is administered. By swallowing, inhalation, absorption through the skin, or intravenous injection, drugs may be taken in a number of ways. Each route provides its own benefits and drawbacks.

Side effects often occur, depending on the drug, the way it is administered, and how our bodies react. Such side effects can differ greatly in form and severity from individual to individual. An oral medicine for seasonal allergies, for instance, may cause unwanted drowsiness or an upset stomach.

A common approach to minimise adverse effects and drug toxicity while optimising the effectiveness of a medication is to prescribe medications locally rather than systemically (affecting the entire body). Any of the systemic side effects of these medications may be prevented by a topical (used on the skin) antibacterial ointment for localised infection or cortisone injection into a sore joint.

Oral drug delivery method is the aqueous solubility of the drug compound in the GI system should be evaluated to determine if modifications are required to enhance bioavailability in order for oral drug delivery to be successful.

Buccal drug delivery method is for extended-release drug delivery (whereby the drug is released in a regulated manner over an extended period of time), formulations that can bind to the mucosa are generally favoured. A number of formulations, including pills, gels, lozenges and patches, have been developed for oral delivery.

Sublingual drug delivery method is the hepatic first-pass metabolism is also prevented by this delivery pathway. However, it does interrupt speech, eating and drinking, which is disadvantageous. Furthermore, the absorption and consequent effectiveness of the medication is decreased by smoking due to vessel vasoconstriction, so it is not advised to use it in smokers.

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Ocular drug delivery method is for the distribution of medications to particular sections of the eye, there are many different administration paths. The problems of supplying drugs to ocular tissues have been partly explored by researchers.

Nasal drug delivery in general, nasal spray drugs are used to treat local diseases affecting the upper respiratory tract. The thin nasal mucosa is highly vascularized, which means that the transition to systemic blood circulation is rapid, and it is possible to prevent first-pass metabolism similar to oral administration.

Pulmonary drug delivery is the vast absorptive surface area and highly permeable membrane of the alveolar zone, pulmonary drug delivery has also been studied as a possible route of administration for systemic diseases.

Vaginal/anal drug delivery method is the administration of vaginal medications prevents first-pass metabolism and is unaffected by gastrointestinal disorders. For the administration of hormones and to resolve women's health problems, the vaginal route is also considered. There are different choices for vaginal formulation, including hydrogels, capsules, pessaries or suppositories.

Transdermal drug delivery method is the delivery of transdermal drugs is a method of systemically distributing a drug by applying a formulation to intact skin. The drug initially penetrates the stratum corneum and then advances into the deeper epidermis and dermis, where the dermal microcirculation eventually systemically absorbs it.