OPEN ACCESS Freely available online

Journal of Developing Drugs

ISSN: 2329-6631

Perspective

# Types of Drug Delivery System and Drug Therapies

**Hannah Blair***

*Children's Heart Centre, British Columbia Children's Hospital and University of British Columbia, Vancouver, Canada*

## INTRODUCTION

Drug delivery is a method or process of administering a pharmaceutical compound to bring a therapeutic effect to a human or animal (or) a system used as a vehicle or "carrier" for delivering a therapeutic agent/drug to the patient's body.

**Types of drug delivery systems**

- Oral drug delivery.
- Nasal drug delivery.
- Ocular drug delivery.
- Oral drug delivery.
- Pulmonary drug delivery systems.
- Sublingual drug delivery.
- Transdermal drug delivery.
- Vaginal/anal administration of medicines.

The nasal and pulmonary routes of drug administration are becoming increasingly important in the treatment of human disease. These routes provide a promising alternative to parenteral drug delivery, especially for peptide and protein therapies. Several drug delivery systems have been developed for this purpose and are being studied for delivery to the nose and lungs. These include, but are not limited to, liposomes, proliposomes, microspheres, gels, prodrugs and cyclodextrins. Nanoparticles composed of biodegradable polymers are safe to meet the stringent requirements imposed on these delivery systems, such as delivering drugs in a given manner and degrading within an acceptable time range.

## DESCRIPTION

### Oral drug delivery systems

Oral drug delivery system provides maximum active surface area thereby resulting in effective treatment by enhancing the therapeutic index. More flexibility, reduced dosing frequency and better patient compliance are the major reasons for opting oral drug delivery route. For oral drug delivery to be successful, the aqueous solubility of the drug compound with inside the GI need to be assessed to decide if changes are required to enhance bioavailability. Oral drug delivery have drawbacks in relation to its suitability for sure affected person populations including; pediatric, geriatric and people with cognitive impairment.

### Buccal drug delivery

Buccal drug delivery represents the delivery of the drug through the buccal mucosa (cheek mucosa). This route of administration avoids the first-pass effect (rapid uptake of the drug by the liver and metabolism to inactive compounds) and presents a "challenge" barrier to drug absorption, especially for large biopharmacy. Dosing is currently restricted to small molecule drugs with lipophilicity, such as: They can easily pass through the membrane. Since the oral route is often used for sustained release drug delivery (drugs are released in a controlled manner over a long period of time), formulations that can adhere to the mucosa are usually preferred. Various formulations have been developed for oral delivery, including: Tablets, gels, troches, patches.

### Nasal drug delivery

Nasal drug delivery involves delivery of the drug through the nasal cavity. Nasal drops are usually used to treat local conditions that affect the upper respiratory tract (eg, stuffy nose, allergic rhinitis). However, in certain situations (for example, when a quick start is required), this delivery approach can be used for systemic delivery of small molecule drugs. The thin nasal mucosa is highly angiogenic, which allows for rapid transition to systemic blood flow and avoids first-pass metabolism, similar to oral administration. Liquid and (less common) powder formulations can be used for nasal drug delivery.

### Ocular drug delivery systems

Ocular drug systems has been really of a tough challenge for drug delivery scientists, because of the attention's particular anatomy and physiology-each static, dynamic and metabolic ocular boundaries hinder the absorption of medication *via* the attention. There are numerous unique management routes for the delivery of medication to unique components of the

**Correspondence to:** Dr. Hannah Blair, Children's Heart Centre, British Columbia Children's Hospital and University of British Columbia, Vancouver, Canada, Tel:+1-604-875-3462; E-mail: blairemaile@gmail.com

**Received:** 02-May-2022, Manuscript No. EOED-22-17158; **Editor assigned:** 06-May-2022, Pre QC No. EOED-22-17158 (PQ); **Reviewed:** 20-May- 2022, QC No. EOED-22-17158; **Revised:** 27-May-2022, Manuscript No. EOED-22-17158 (R); **Published:** 08-Jun-2022. DOI:10.35248/2329-6631.22.11.171.

**Citation:** Blair H (2022) Types of Drug Delivery System and Drug Therapies. J Develop Drugs. 11:171.

attention. Researchers had been capable of partly fight the demanding situations of turning in capsules to ocular tissues *via* figuring out unique efflux and inflow transporters in the attention and editing capsules to goal those transporters.

### Pulmonary drug delivery

Pulmonary drug delivery describes the management of a drug through inhalation the mouth and into the airways. Inhaled medicinal drugs are a powerful approach for treating nearby ailment of the lungs. More recently, pulmonary drug delivery has additionally been studied as an ability direction of management for systemic sicknesses because of the considerable absorptive region and distinctly permeable membrane of the alveolar region.

### Sublingual drug shipping

Sublingual drug shipping is the time period used for management of a drug below the tongue, that's then absorbed into the bloodstream through the tongue`s ventral floor and the ground of the mouth. Sublingual absorption is rapid; consequently onset of transport may be carried out quickly. This direction of shipping additionally avoids hepatic first ‐ pass metabolism. The disadvantages for this route of sublingual delivery, high bioavailability is to avoid drug destruction. Moreover efficient overall for certain drugs than intestinal uptake. The onset of drug effect may also be quicker than with oral ingestion.

### Transdermal drug delivery

Transdermal drug delivery is a way of turning in a drug systemically by making use of a method onto intact skin. Initially the drug penetrates the stratum corneum after which progresses *via* the deeper dermis and epidermis in which ultimately systemically absorbed through the dermal microcirculation.

### Vaginal/anal drug delivery

Vaginal/anal drug delivery routes have a quicker onset of motion in comparison to the oral direction and a better bioavailability. Rectal medicinal drugs may be used to show off nearby effects (e.g., laxative) or systemic effects (e.g., analgesics whilst different routes are contraindicated). Vaginal drug management avoids first-pass metabolism and is unaffected by the gastrointestinal disturbances. The vaginal direction is regularly taken into consideration for management of hormones and to cope with women`s fitness issues. Numerous vaginal method alternatives are to be had including; hydrogels, tablets, pessaries or suppositories.

## CONCLUSION

These foreign agents may include drugs encapsulated in targeted delivery carriers. Therefore, researchers are working to develop reliable ways to deliver treatment to target cells, but more technology is being developed to ensure that treatment reaches the proper structure within the cell. Ideally, future healthcare would include an intelligent delivery system that bypasses cell defense, delivers the drug to targeted intracellular sites, and releases the drug in response to specific molecular signals.