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Editorial

Drug Targeting

Christo Cimino*

Department of Haematology, University College London Hospitals, Trust, London, UK

*Corresponding author: Christo Cimino, Department of Haematology, University College London Hospitals, Trust, London, UK, E-Mail: *christocimino@gmail.com* Received date: February 08, 2021; Accepted date: February 22, 2021; Published date: February 26, 2021

Introduction

Drug targeting means to deliver the drug only on its site of action & to not the non-target organs, tissues or cells.

Ideal characteristics of targeted drug delivery:

• Bio-chemically Inert.

- Non immunogenic
- · Physically and chemically stable

• The carrier must be biodegradable or readily eliminated from body easily.

• Preparation of the delivery system must be reproducible, cost effective and straightforward.

Types of Drug Targeting

First order targeting: It involves the delivery of the drug to the precise organ or a tissue.

Second order targeting: It involves the targeting towards the precise cell type within the tissue or organ (e.g: Tumour cell vs normal cell).

Third order targeting: It involves a delivery to a selected intracellular component within the target cell (e.g: Lysosomes).

Approaches of drug targeting

First approach: It involves the utilization of biologically active agents that are both potent & selective to a specific site within the body.

Second approach: It involves the preparation of pharmacologically inert sort of active drugs, which upon reaching the active sites becomes activated by a chemical or enzymatic reaction.

Third approach: biologically inert macro molecular carrier system that directs the drug to a selected site within the body where it's accumulated & shows its effect.

Levels of Drug Targeting

Passive targeting: It occurs due to the body's natural response to the physiochemical characteristics of the drug or drug carrier system.

Inverse targeting: This process involves the reversion of the biodistribution trend of the carrier & hence the method is refereed because the inverse targeting.

Active Targeting: Active targeting of drug-loaded nanoparticles enhances the consequences of passive targeting to form the nanoparticle more specific to a target site.

Factors affecting the Drug Targeting

Cellular uptake and processing

Affected by: Hydrophilic property of carrier system. its relative molecular mass, size.

Transport across the epithelial barrier

Affected by: PH of the location, area, Enzymes present.

Extravasation

Affected by: Permeability of blood capillary walls, rate & flow of the blood.

Lymphatic uptake

Affected by: Flowing Extravasation, Drug molecules either reabsorbed within the blood circulation.

Applications

Drug delivery is often wont to treat many diseases, like the cardiovascular diseases and diabetes. In doing so, the passive method of targeting tumours takes advantage of the improved permeability and retention (EPR) effect. This is often a situation specific to tumours that results from rapidly forming blood vessels and poor lymphatic drainage.

The American Heart Association rates disorder because the favourite explanation for death within us. Annually 1.5 million myocardial infarctions (MI), also referred to as heart attacks, occur within us, with 500,000 resulting in deaths. The prices associated with heart attacks exceed \$60 billion per annum. Therefore, there's a requirement to return up with an optimum recovery system

Problems facing through drug targeting

The main problems currently related to systemic drug administration are: even bio-distribution of pharmaceuticals throughout the body; the shortage of drug specific affinity toward a pathological site; the need of an outsized total dose of a drug to realize high local concentration; non-specific toxicity and other adverse sideeffects thanks to high drug doses. Drug targeting, i.e. predominant drug accumulation within the target zone independently on the tactic and route of drug administration, may resolve many of those problems.

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