Research and Reviews: Drug Delivery

Traditional Drug Delivery at Specific Areas in the Body

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Short Communication

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ABOUT THE STUDY

Targeted drug administration or smart drug delivery relates to administering local anesthesia in specific areas of the body rather than others in a more condensed solution. This method of delivery is mostly based on nanomedicine, which aims to use medication administration *via* nanoparticles to counter the drawbacks of traditional drug delivery. These drug-loaded nanoparticles would be directed to specific areas of the body that only contain diseased tissue, avoiding contact with healthy tissue. A targeted medicine delivery system aims to extend, localise, target, and engage with the sick tissue in a safe manner. While the targeted release system delivers the medicine in a dose form, the traditional drug delivery system involves the drug being absorbed through a biological membrane. The patient will need to take fewer doses more frequently, the drug will have a more consistent impact, there will be fewer adverse effects, and there will be less fluctuation in the drug levels in the blood.

The system's drawbacks include a high price tag that makes productivity more challenging and a limited ability to change dosages. To maximise the effectiveness of regeneration methods, targeted medication delivery systems have been created. Using a more concentrated solution, targeted medication delivery refers to the practise of only applying local anaesthetic to certain parts of the body and not others. This aids in maintaining the necessary plasma and tissue drug levels in the body, preventing any drug-induced harm to healthy tissue [1]. The drug distribution system is extremely interwoven, thus it takes experts from several fields to work together to make it as efficient as possible. The medication is delivered throughout the body by the systemic blood circulation in conventional drug delivery methods like oral consumption or intravascular injection. As with chemotherapy, where 99% or more of the administered chemicals do not reach the tumour site, the majority of therapeutic agents only deliver a limited percentage of the medication to the injured organ.

Targeted drug delivery aims to increase the concentration of the drug in the target tissues while decreasing the relative concentration of the drug in the non-target tissues. For example, by avoiding the host's defense mechanisms and inhibiting non-specific distribution in the liver and spleen a system can reach the intended site of action in higher concentrations [2]. Increasing effectiveness while reducing side effects is expected to be possible with targeted distribution.The qualities of the medications, their adverse effects, the route selected for drug delivery, the targeted site, and the disease must all be taken into consideration when adopting a targeted release system. The qualities of the medications, their adverse effects, the route selected for drug delivery, the targeted site, and the disease must all be taken into consideration when adopting a targeted release system.

A regulated microenvironment is necessary for the development of more new treatments, and this can only be achieved by using therapeutic agents whose negative effects can be minimised by targeted drug delivery [3]. To regenerate cardiac tissue, advances in the field of targeted medication delivery to cardiac tissue will be crucial. Increasing effectiveness while reducing side effects is expected to be possible with targeted distribution. Active targeted drug delivery includes certain antibody medicines and increased permeability and retention effect to achieve passive targeting, the medicinal material is incorporated into a macromolecule or nanoparticle that passively goes to the target organ [4]. The success of the medicine in passive targeting is directly correlated with the length of circulation. By covering the nanoparticle with a coating, this is accomplished by a number of chemicals, polyethylene glycol being one of them (PEG). The nanoparticle's surface is made hydrophilic by adding PEG, enabling water molecules to form hydrogen bonds with the oxygen molecules on PEG.

A layer of hydration forms around the nanoparticle as a result of this interaction, making the material antiphagocytic. The reticuloendothelial system (RES intrinsic)'s hydrophobic contacts give the particles this feature, which allows the drug-loaded nanoparticle to circulate for a longer time. It has been discovered that nanoparticles between 10 and 100 nanometers in size circulate systemically for extended periods of time to cooperate with this passive targeting mechanism.

The effects of passive targeting are enhanced by active targeting of drug-loaded nanoparticles, which increases the target site specificity of the nanoparticle [5]. There are numerous methods for implementing active targeting. One method to specifically target sick tissue in the body is by being aware of a cell's receptor for the medication that will be utilised to target it. The nanoparticle may then precisely connect to the cell that contains the complementary receptor using cell-specific ligands, which can be used by researchers. Transferrin has been proven to work well as the cell-specific ligand in this type of active targeting.

REFERENCES

1. Simler R, et al. Maximizing data collection and analysis during preformulation of biotherapeutic proteins. Bioprocess Int. 2008; 6:38-45. [Google Scholar]
2. Nocent L, et al. Definition of a solvent system for spherical crystallization of salbutamol sulfate by quasi-emulsion solvent diffusion (QESD) method. J Pharm Sci. 2001;90:1620-1627. [Google Scholar]
3. Chang BS, et al. Practical approaches to protein formulation development. inRationale Design of stable protein formulations-theory and practice. Kluwer Academic/Plenum publishers. 2002;5:1-25. [Google Scholar]
4. KrisztinaTaka´cs-Nova´k, et al. Interlaboratory study of log P determination by shake-flask and potentiometric methods. J Pharm Biomed Anal. 1996;14:1405 [Google Scholar]
5. Abdel-Mottaleb MM, et al. Standardized in vitro drug release test for colloidal drug carriers using modified

USP dissolution apparatus I . Drug Dev Ind Pharm. 2011;37:178-184. [Crossref] [Google Scholar] [Pubmed]