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Commentary

TARGETED DRUG DELIVERY

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INTRODUCTION

Because of the increased delivery of medications and genes to a tumour site while being protected from the extracellular environment, Targeted Drug Delivery (TDD) is emerging as a significant technique for cancer treatment. Stimulus-responsive nanogels (NGs) are three-dimensional hydrophilic polymer networks that can modify their structural properties in response to external stimuli. They are made up of covalent bonds or self-assembly processes. Because of their stability, ease of synthesis, good control over particle size, and ease of functionalization, these NGs have been extensively studied as smart drug delivery carriers for a variety of anticancer medicines and genes. They can regulate the size of the particles from 5 to 400 nm, as well as the polymerization conditions. Drugs with short half-lives (less than 4 hours) benefit from targeted drug administration because it reduces dose frequency and the intensity of unwanted effects caused by drug concentration changes. Especially when a therapeutic effect cannot be maintained overnight due to an inconsistent dose regimen that results in a higher severity of unwanted effects. Targeting genes with short half-lives to specific RNA binding proteins is possible. Targeting prolyl isomerase pin1 to RNA binding proteins can control mRNA genes with short half-lives.

Targeted drug delivery via innovative drug delivery systems and nanotechnology intervention is becoming a major component in medicine's future. Every year, new active pharmaceutical ingredients (APIs), biologics, novel drug delivery methods, and nanopharmaceuticals are produced and commercialised around the world following successful clinical studies. These formulations are expected to capture a significant portion of the present market in the near future. Regulatory permission is required for the translation of laboratory research to bedside medicine. Understanding the regulatory requirements for product approval is crucial in this regard. Given the expensive expense of medicine and the potentially fatal adverse effects of drug therapy, tailored drug administration is critical in clinical practise. As a result, targeted drug delivery to solid tumours is a hot topic in research, with the emphasis on better drug formulation and associated [1,2] optimum delivery methods/devices. Medication-targeting has the potential to improve drug delivery efficacy, reduce adverse effects, and lower treatment costs significantly. The vast majority of drug-targeting studies, on the other hand, assume that the drug-particles are already at or near the target site.

Current issues in pulmonary drug delivery include targeted drug delivery and controlled release. Oral (pill eating), intravenous (drug injection into a vein), and inhalation are three common medication delivery methods (breathing into the human lung). In recent years, pulmonary medication delivery techniques have attracted a lot of attention, with applications ranging from asthma and Chronic Obstructive Pulmonary Disease (COPD) to lung malignancies and systemic disorders. When compared to conventional medical therapies, the advantages of pulmonary drug delivery include increased efficiency due to the huge surface area of the lung (100 m^2) and thin epithelial layer thickness (0.2 to 0.7 m), lower systemic drug levels with fewer side effects, and greater convenience. Because the drug aerosol is delivered directly to the target location, a considerably smaller dose can be employed to provide a therapeutic response with minimal adverse effects [3]. Inflammation, asthma, COPD, and cystic fibrosis (CF), as well as diabetes and other systemic disorders, are all treated with pulmonary drug delivery methods. The aerodynamic dimensions of drug particles/droplets should be in the range of 0.4 dp 7 m for optimal treatment. The optimization of pulmonary medication delivery (e.g., drug-targeting administration in lung airways) is difficult due to advanced pharmaceutical aerosol formulations and the complicated architecture and physiology of human lung airways. The use of physical or chemical mechanisms, innovative particles or drug carriers, and new drug-delivery device

improvements with increased performance are the main research concerns in pulmonary drug delivery. The following are some of the benefits of pMDIs: portability, precise dosage management, and a big capacity of medical dosages at a low cost. pMDIs have a number of drawbacks, including being highly reliant on the patient's inhalation coordination, being limited to certain drugs that are physically and chemically inert in the propellant mixture, and not being effective in treating deeper lung conditions due to the strong impaction in the upper respiratory system caused by the high jet velocity. For example, only around 10% to 20% of the drugs emitted by CFC-pMDIs are able to enter and deposit in the lungs, while the rest is deposited in the oropharynx. Furthermore, the deposition of drug formulation material inside the canister can result in the delivery of an erroneous dose of medication [4,5].

REFERENCES

1. Freeman AI, Mayhew E (1986). Targeted drug delivery. ***Cancer*** 58:573-583.
2. Mills JK, Needham D (1999). Targeted drug delivery. ***Expert Opin Ther Pat*** 9:1499-1513.
3. Bae YH, Park K (2011). Targeted drug delivery to tumors: Myths, reality and possibility. ***J Control Release*** 153:198.
4. Singh R, Lillard Jr JW (2009). Nanoparticle-based targeted drug delivery. ***Exp Mol Pathol*** 86:215-23.
5. Kazi KM, Mandal AS, Biswas N (2010). Niosome: A future of targeted drug delivery systems. ***J Adv Pharm Technol Res*** 1:374.

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