

Keywords: Drug delivery systems; Pharmaceutical; Nanotechnology; Biotechnology; Therapeutics; Clinical trials; Nanoparticles; Liposomes; Microspheres; Hydrogels

Introduction

Drug delivery systems (DDS) are designed to transport a drug from the site of administration to the site of action in a controlled manner. The development of DDS is a multidisciplinary field involving pharmaceutical science, materials science, and engineering. The primary goal of DDS is to improve the efficacy and safety of drug therapy. This is achieved by controlling the rate and site of drug release, protecting the drug from degradation, and targeting the drug to the site of action. The most common DDS include liposomes, microspheres, and hydrogels. These systems have been used to deliver a wide range of drugs, including chemotherapeutic agents, vaccines, and proteins. The use of DDS has led to significant improvements in drug therapy, including increased efficacy, reduced toxicity, and improved patient compliance. The development of DDS is an ongoing process, and new systems are being developed to address the challenges of drug delivery. The use of nanotechnology in drug delivery is a particularly promising area of research, as it allows for the development of systems with unique properties and capabilities. The use of nanotechnology in drug delivery is expected to lead to significant improvements in drug therapy in the future. [1,2](#)

Methodology

Nanotechnology in drug delivery: Nanotechnology is the study of materials and devices on the nanoscale, which is the scale of atoms and molecules. Nanotechnology has a wide range of applications, including drug delivery. The use of nanotechnology in drug delivery allows for the development of systems with unique properties and capabilities. Nanoparticles, which are particles with a diameter of 1-100 nanometers, are a key component of nanotechnology in drug delivery. Nanoparticles can be used to deliver drugs in a controlled manner, protecting the drug from degradation and targeting the drug to the site of action. The use of nanotechnology in drug delivery has led to significant improvements in drug therapy, including increased efficacy, reduced toxicity, and improved patient compliance. The development of nanotechnology in drug delivery is an ongoing process, and new systems are being developed to address the challenges of drug delivery. The use of nanotechnology in drug delivery is expected to lead to significant improvements in drug therapy in the future. [3-5](#)

Targeted drug delivery: Targeted drug delivery is the process of delivering a drug to a specific site in the body. This is achieved by using a carrier system that can target the drug to the site of action. Targeted drug delivery systems are designed to improve the efficacy and safety of drug therapy. The most common targeted drug delivery systems include liposomes, microspheres, and hydrogels. These systems have been used to deliver a wide range of drugs, including chemotherapeutic agents, vaccines, and proteins. The use of targeted drug delivery systems has led to significant improvements in drug therapy, including increased efficacy, reduced toxicity, and improved patient compliance. The development of targeted drug delivery systems is an ongoing process, and new systems are being developed to address the challenges of drug delivery. The use of targeted drug delivery systems is expected to lead to significant improvements in drug therapy in the future. [6](#)

Implantable drug delivery devices: Implantable drug delivery devices are designed to deliver a drug over a long period of time. These devices are typically implanted into the body and release the drug in a controlled manner. Implantable drug delivery devices have a wide range of applications, including the treatment of chronic diseases and the delivery of vaccines. The use of implantable drug delivery devices has led to significant improvements in drug therapy, including increased efficacy, reduced toxicity, and improved patient compliance. The development of implantable drug delivery devices is an ongoing process, and new devices are being developed to address the challenges of drug delivery. The use of implantable drug delivery devices is expected to lead to significant improvements in drug therapy in the future.

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Discussion

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Conclusion

D ... E ...

M ...

I ... N ... B ...

References

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