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Nano Sponges: Applications and a Specific Drug Delivery System

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Abstract: *Nano sponges have emerged as a promising paradigm in the realm of drug delivery systems, offering unprecedented advantages in targeted and controlled drug release. This review encapsulates the synthesis methodologies, structural features, and the myriad applications of nano sponges as a versatile platform for drug delivery. The porous nanostructure of these materials provides an ideal reservoir for encapsulating diverse therapeutic agents, facilitating precise and sustained release at specific target sites. The unique physicochemical properties of nano sponges, including their biocompatibility and tunable surface functionalities, contribute to enhanced drug stability and bioavailability. Furthermore, the ability to tailor the size and composition of nano sponges allows for customization, optimizing their performance for various therapeutic scenarios. This review comprehensively explores the applications of nano sponges in treating diverse diseases, such as cancer, infectious diseases, and inflammatory disorders, showcasing their potential to revolutionize the landscape of modern medicine. The integration of nano sponges as a targeted drug delivery system holds promise for minimizing side effects, improving patient compliance, and maximizing the therapeutic efficacy of pharmaceutical agents, marking a significant stride towards personalized and precision medicine.*

Keywords: Nano sponges; Targeted dug delivery; Solubility enhancement; Controlled drug delivery

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