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Review Article

Cyclodextrin Based Nanosponges: A Multidimensional Drug Delivery System and its Biomedical Applications

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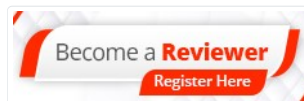
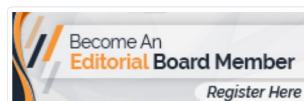
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Abstract

Cyclodextrin based nanosponges are the designed nanocarriers for the projected delivery of complex drugs. They are multifunctional hypercrosslinked cyclodextrin polymers connected in a three-dimensional, mesh-like network. Their functional characteristics can be fabricated by using different crosslinkers or their different ratios with polymer. They can encapsulate various hydrophilic, lipophilic, small-sized or large-sized drug molecules. They offer formulation flexibility and are primarily used for solubility, bioavailability and stability enhancement purposes. This system is also pliable for co-delivery of pharmaceutical entities, improving therapeutic efficacy and patient compliance. If the surface of nanosponge

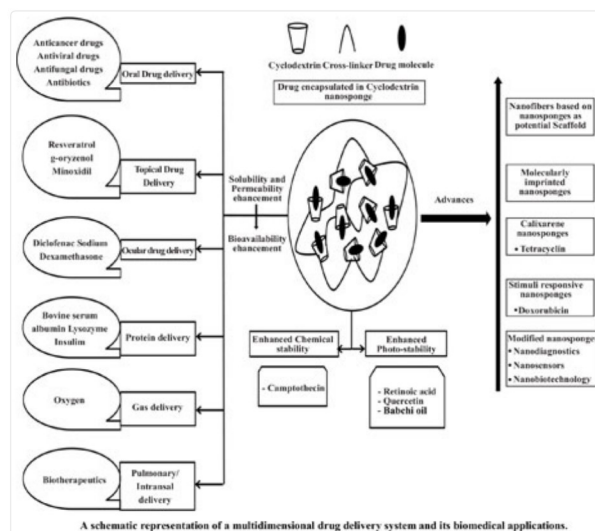
is coupled with an appropriate ligand, even a target specific drug delivery can be achieved. It has a variety of applications in the field of pharmacy for the delivery of tricky drug molecules, proteins, enzymes, natural moieties and gaseous compounds. The list of its applications further widens with the development of nanodiagnostics, nanosensors, biomimetics and scaffolds based on nanosponges. The sudden explosion of research in this working area signifies cyclodextrin nanosponge based products in the market soon.

Keywords: [Nanosponges](#), [cyclodextrin based nanosponges](#), [drug delivery](#), [solubility](#), [bioavailability](#), [encapsulation](#).

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