

## Drug Delivery by Nanosponges

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### ABSTRACT

Nanotechnology is the creation of functional materials, devices and systems through control of matter on the nanometer length scale (1-100 nanometers), and exploitation of novel phenomena and properties at that length scale. Nanotechnology is an exciting new area in science, with many possible applications in medicine. They play an important role in different areas such as diagnosis of diseases, drug delivery, imaging, and so on. Nanotechnology in medicine currently being developed involves employing nanoparticles to deliver drugs, heat, light or other substances to specific types of cells (such as cancer cells). Particles are engineered so that they are attracted to diseased cells, which allow direct treatment of those cells. This technique reduces damage to healthy cells in the body and allows for earlier detection of disease. Nanosponges are a new class of materials and made of microscopic particles with few nanometers wide cavities, in which a large variety of substances can be encapsulated. These particles are capable of carrying both lipophilic and hydrophilic substances and of improving the solubility of poorly water soluble molecules. B-Cyclodextrin based Nano sponges are tiny mesh-like structures that may revolutionise the treatment of many diseases and early trials suggest this technology is up to one to five times more effective at delivering drugs for breast cancer than conventional methods. Drugs which are particularly critical for formulation in terms of their solubility can be successfully delivered by loading into the nanosponges. The aim of the present study is to outline the role of nanosponges in drug delivery.