

Nanosponge based haemostatic material –An application of Biotechnology

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ABSTRACT

Nanosponges are an emerging drug delivery system which was originally developed for topical delivery of drugs. These are constituted of tiny sponges with a size of about a virus (250 nm -1 μ m), which consists of cavities that can be filled with a wide variety of drugs. The sponge acts as a three dimensional network or scaffold which consists of the backbone known as polyester. It is mixed in solution with cross linkers to form the polymer. The polyester is biodegradable so it breaks down gradually in the body thereby slowly releasing the drug loaded into it. There can be a precise control on the release rates or target drugs to a specific body site through nanosponges. It consists of nano or micro porous beads loaded with active agents that release the drug at the specific site in a confined manner which lasts for more than four hours. This nanosized delivery system has definite advantages for the purpose of drug delivery because of its high stability, non toxic nature, high carrier capacity and feasibility of incorporation of both hydrophilic and hydrophobic substances. The nano sponges can easily be detected by using X –Rays and helps to trace the location of the drug. Thus they can be used for an initial step for hemostatic activity.