



Chitosan Source: Shrimp shells

Cell Culture Tested

Product Code: TC242

Product Description:

Molecular weight: 3800-20,000 Daltons Molecular formula: $[C_6H_{11}O_4N]n$ CAS No.: 9012-76-4 Synonyms: Poly-(1-4)-B-D-Glucosamine, Poly[(1,4)-N-acetyl-D-glucose-2-amine)]

Chitosan is a copolymer of randomly distributed units of D-glucosamine and N-acetyl-D-glucosamine. This polysaccharide is the deacetylated form of chitin which is the structural element of the exoskeleton of crustaceans such as crabs and shrimp. It is a biodegradable, safe and non-toxic natural polymer. The biocompatibility of chitosan is assumed to be its structural similarity to glycosaminoglycans which are located on the cell surface of mammalian cells.

Applications and uses of chitosan:

1. As scaffolding material and cell attachment factor: In tissue engineering and cell culture, chitosan is used as

a scaffolding material. Chitosan enhances the attachment and spreading of fibroblasts in cultures. It improve the adhesiveness of cultured cells. The degree of cell attachment is directly proportional to the degree of deacetylation.

2. Drug delivery:

Chitosan is used as a carrier for molecular drugs that require targeted delivery.

3. Antioxidant:

Chitosan has strong hydrogen-donating ability and high degree of quarternization. Therefore, it is used as an antioxidant in cell culture systems.

4. Antibacterial and antifungal agent:

The cationic nature of chitosan, its water-binding capacity, ability to chelate trace metals and interact with DNA and RNA, are responsible for antibacterial and antifungal actions of chitosan.

TC242 is cell culture tested chitosan powder/flakes obtained from shrimp shells with degree of deacetylation greater than 75%.

Directions:

Instructions:

Chitosan is poorly soluble in most organic solvents. The water-solubility can be improved by certain modifications of the structure. It is readily soluble in aqueous solutions of some acids. Chitosan solutions are sterilized by autoclaving or by filter sterilization.

Procedure for coating of cell culture vessel with chitosan:

1. Dissolve appropriate quantity of chitosan in 1M acetic acid to obtain the desired concentration (concentration will depend on the type of cell line under study).

2. Strain the solution to remove any undissolved particles.

3. Autoclave to sterilize and allow it to cool to room temperature.

4. Filter sterilize the solution.

5. Add sufficient quantity of the chitosan solution to a culture vessel enough to cover its entire surface. Incubate overnight at 37° C.

6. Aspirate the entire solution from culture vessel and wash the vessel with 1X phosphate buffered saline (PBS) or cell culture-grade water to remove traces of acetic acid.

Quality Control:

Appearance

Off-white to beige powder or flakes

Solubility

Clear to slightly hazy colourless to light yellow solution at 100mg in 10 ml of 1M acetic acids

Water (K.F.) NMT 10.0%

Ash NMT 2.0%

Degree of Deacetylation NLT 75.00%

Cell Culture Test Passes

Storage and Shelf Life:

Store chitosan powder/flakes at 15-30°C in air tight container. Shelf life is 36 months. Use before expiry date given on product label.

Revision : 2 / 2017

Disclaimer :

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