

Chitosan from Shellfishes having Promising Biomedical Importance: An Editorial

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Chitosan is polysaccharide in nature with linearity in arrangement and composed of β -(1-4)-linked D-glucosamine (deacetylated unit) and N-acetyl-D-glucosamine (acetylated unit) which remain in a random distribution. Chitin and the derived chitosan, both have potential industrial and biomedical implications for treatment of many ailments in human beings.

Chitosan for use in industrial purpose is extracted from the chitin after deacetylation of chitin which is the major structural element of the exoskeletons of crustaceans and lobsters, prawns and cell wall of fungi [1].

Chitosan finds its application in water treatment plants as a part in the filtration process. It helps in the removal of hardness by the removal of sediments during salt filtration by adsorption of phosphorus, heavy minerals and oils from the water in combination with bentonite, gelatin, silica gel, isinglass or other refining agents. Chitosan also helps in clearing the turbidity in water and also used as a precipitant for casein used for manufacturing cheese from milk [1].

Chitosan in ultrapure form has numerous biomedical implications. Chitosan has mucoadhesive property and so used for intradermal and sustained drug delivery [2], for example, in the administration of insulin in insulin dependent diabetes mellitus. Chitosan is biocompatible and biodegradable which enhances the polar drug transport across epithelial membranes and surfaces [3].

Chitosan coating serve as an antioxidant and micro-diffusion barrier and prevents the loss of water, texture, odor and color thereby improving the overall accessibility of the seafood. The shelf life of *Penaeus monodon* coated with chitosan dips extend the shelf life of shrimp [1,4].

Chitosan has the property to clot blood and so also used in haemostatic agents for acceleration of wound healing property in humans. Chitosan also possess hypoallergenic and has natural antibacterial properties, which further support its use in field bandages. The flexible nature of chitin is used for making strong and tensile surgical threads having high biodegradability and wound healing property. The antimicrobial property of chitosan is attributed to slightly acidic pH [1,4].

Chitosan also helps in increased lipid excretion from the body system after interaction and binding with oily components in the digestive tract. Its fat binding property helps in decrease of body mass index especially in obese patients who are advised to be supplemented with the chitosan for nearly 8 weeks continuously for encouraging results [5,6].

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