



Chitosan, Chitin, and Cellulose Nanofiber Biomaterials II

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Message from the Guest Editor

There is increasing interest in using natural polymers and fiber-filled composites to achieve the development of functional biomaterials for varied applications. Commonly used biopolymers include the polysaccharides chitosan, chitin, and cellulose, and their derivatives. Chitosan is a copolymer of $\beta(1\rightarrow4)$ -linked D-glucosamine and N-acetyl D-glucosamine, mainly produced by the deacetylation of chitin—the second most abundant polysaccharide worldwide, most commonly found in crustacean cuticle. The degree of acetylation and molecular weight are the most important parameters of a copolymer, defining the physico-chemistry and properties of the chitinous compound. Chitosan structurally belongs to the glycosaminoglycan family, for which bioactivity has been revealed in tissue engineering studies centered on skin, bone, cartilage, and, more recently, intervertebral disc. The biocompatibility of chitinous biomaterial, together with its bioactivity, suggests its great potential for biomedical applications. Fundamental research relating chitosan/chitin physico-chemistry with biological properties is only addressed by a relatively minor number of studies.





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