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Chitosan, a Biomimetic Biopolymer: Sources, Characteristics and its Applications in Biomedical

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Biomimetics and bioinspiration science is not only provide the quality improvement of technological products and processes, but also a promising solution for human beings to get out of the problems caused by modern technologies and lifestyles. One of the achievements of this knowledge is the efficient replacement of natural materials such as biopolymers with synthetic chemicals. One of the most abundant biopolymers is chitin and its deacetylate form, chitosan. Chitosan has unique characteristics including biocompatibility, biodegradability, bioactivity, non-toxicity, and antimicrobial activation. This biomaterial has found many biomimetics applications in biomedical today, including tissue engineering, wound dressing, drug delivery, bio imaging, and ophthalmology. Chitin is commonly extracted from the waste skin of shrimp and then converted to chitosan. In recent years, researchers have considered an important alternative source of chitin, including insects, due to the limited marine resources. This work reviews the sources, physicochemical, biological, and usages of chitosan in biomedical fields.

Keywords: Biomimetics, Bioinspiration, Biopolymers, Chitin, Chitosan, Biomedical.

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