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Diana Marcela Escobar Sierra

Chitosan

Properties and Applications in Bioengineering

Springer

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Prologue

Bioengineering can be understood as an interdisciplinary area of knowledge that deals with life's problems by applying the tools and methods used in engineering, in order to satisfy the growing demand for technologies, not only to benefit human beings but all living things.

Bioengineering consists of various fields such as biomechanics, clinical engineering, bioinstrumentation, and biomaterials, where each one has different objectives, but all are related to the benefits of engineering for the service of life.

The field of biomaterials is transversal to the previously mentioned fields. Biomaterials, and especially polymeric biomaterials, is one of the most prominent in bioengineering, given that both natural and artificial biopolymers have played an important role in life, whether they are in direct or indirect contact with the human body.

The search for less aggressive materials with the environment has led to the use of natural and renewable biopolymers such as chitosan. Besides being the second most abundant natural polymer after cellulose, it is also the one with the best properties and having the most diverse field of applications in everyday life.

That is why it is important to work and research on special topics such as biopolymers and writing this text, where the main objective is to provide readers with information about the principles and foundations of chitosan as a natural biopolymer that can be used in the various fields of the life.

This text was written as a contribution to teaching and research in the Bioengineering Program, Program belonging to the Faculty of Engineering of the University of Antioquia, and to all those interested in the topic.

The generalization of chitosan is presented in a bibliographic review, which includes information regarding its structure, main properties, the available sources, extraction, and processing techniques, as well as the different applications as a biomaterial in fields such as medicine, agricultural, cosmetological, pharmaceutical, and food industry, with the purpose of having a more technical vision on the current use of this biopolymer.