Economic and Social Implications of Nanochitosan

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Nanochitosan-Based Enhancement of Fisheries and Aquaculture

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Abstract

Researchers who study aquaculture have been interested in diets supplemented with feed additives, among which chitosan and chitosan nanoparticles are the most relevant. Chitin, a naturally occurring polymer found in the exoskeletons of insects, crustaceans, and fungi, is converted into the cationic biopolymer chitosan [β-(1-4)-N-acetyl-D-glucosamine] by alkaline deacetylation. Cross-linking, either chemical or physical, was used to create chitosan nanoparticles. Because of its wide surface area, chitosan nanoparticles have been chosen because of their bioavailability and deep infiltration into the target locations. The biological features of chitosan and chitosan nanoparticles are unique and provide a range of intriguing uses. These properties include biosafety, biocompatibility, enhanced solubility, and biodegradability. Their described characteristics allowed their usage in a variety of fish aquaculture applications, including boosting the immune system and growth performance. They are also frequently used in agriculture, water treatment, and as safe feed additives and medicine carriers. The goal of aquaculture is to safeguard fish against illness and stress while maintaining the steady environmental conditions necessary for their growth. Well-balanced diets should be taken into consideration to ensure a sustained output of fish species. This review highlights interesting applications and economic and societal implications of chitosan and chitosan nanoparticles.

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