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# Incorporation of chitosan nanoparticles into food packaging as a natural antimicrobial agent; A Review

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**Abstract**

Chitosan is a biodegradable, biocompatible polymer derived from natural renewable resources with numerous applications in various fields, one of which is the area of edible films and coatings. Chitosan has antibacterial and antifungal properties, which qualify it for food protection. However, its weak mechanical properties, gas and water vapor permeability, limit its uses. This review discusses the application of chitosan. Many industrial pieces of research have been conducted on nanocomposites for food packaging. In food packaging, the most factor is the improvement of high barrier properties against the oxygen, carbon dioxide, flavor compounds, and water vapor diffusion throughout the packaging films. Due to the large surface area to volume, Nanoparticles have received a significant advantage over other particles to delay the migration of gaseous and interact with the matrix polymers containing these particles. However, the development of nanocomposites based on nano chitosan as a novel method to improve the physical properties of food packaging polymers, including mechanical characteristics, thermal stability, and barrier properties, has been considered. Therefore, some advantages and drawbacks of natural nanocomposite containing nano chitosan have been evaluated in this research.

**Keywords**: Chitosan, Nanocomposites, Food packaging, natural antimicrobial agents

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