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Antifungal, antioxidant and cytotoxic activities of chitosan nanoparticles and its use as an edible coating on vegetables

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**Title:**

Antifungal, Antioxidant and Cytotoxic Activities of Chitosan Nanoparticles and its use as an Edible Coating on Vegetables.

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**Abstract:**

Chitosan is an abundant non-toxic, biodegradable polymer with versatile applications. It is a linear amino polysaccharide obtained from crustacean shells. The chitosan nanoparticles (ChNP) prepared by ionic gelation of chitosan has greater activity owing to its small size. ChNP has been proved to be effective in controlling plants diseases. In this work, we have endeavoured to study the antifungal and antioxidant activity of ChNP and use of ChNP as a vegetable coating material. The activity of ChNP against selected plant pathogens *Rhizoctonia solani*, *Fusarium oxysporum*, *Collectotrichum acutatum*, and *Phytophthora infestans* were studied along with a brief account of its mechanism of action. The antioxidant activity of ChNP was also analysed. The ability of ChNP as a coating material to improve the shelf life of tomato, chilly and brinjal was also studied. The cytotoxicity effect of ChNP against L929 fibroblast cells was studied. ChNP had good antifungal activity against all selected pathogens compared to Amphotericin B.

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