

## Encapsulation of Satureja khuzestanica Essential Oil in Chitosan Nanoparticles with Enhanced Antifungal Activity

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**Abstract :** During the recent years the six-fold growth of cancer in Iran has led the production of healthy products to become a challenge in the food industry. Due to the young population in the country, the consumption of fast foods is growing. The chemical cancer-causing preservatives are used to produce these products more than the standard; so using an appropriate alternative seems to be important. On the one hand, the plant essential oils show the high antimicrobial potential against pathogenic and spoilage microorganisms and on the other hand they are highly volatile and decomposed under the processing conditions. The study aims to produce the loaded chitosan nanoparticles with different concentrations of savory essential oil to improve the anti-microbial property and increase the resistance of essential oil to oxygen and heat. The encapsulation efficiency was obtained in the range of 32.07% to 39.93% and the particle size distribution of the samples was observed in the range of 159 to 210 nm. The range of Zeta potential was obtained between -11.9 to -23.1 mV. The essential oil loaded in chitosan showed stronger antifungal activity against *Rhizopus stolonifer*. The results showed that the antioxidant property is directly related to the concentration of loaded essential oil so that the antioxidant property increases by increasing the concentration of essential oil. In general, it seems that the savory essential oil loaded in chitosan particles can be used as a food processor.

**Keywords :** chitosan, encapsulation, essential oil, nanogel

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