



University of Zabol

Title:

Packaging of Iranian white cheese by nanofibers containing oregano essential oil to
improve microbial quality

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Abstract

Oregano is one of the drugs used in traditional medicine, it is an aphrodisiac, an abortifacient, and it is a medicinal plant. Oregano essential oil is very concentrated and even in small amounts it is poisonous and deadly. Oregano essential oil was investigated in concentrations of 0-5.2-5.0-10% and oregano essential oil was successfully loaded into zein nanofibers. The morphology and diameter of electrospun nanofibers were evaluated with the help of scanning electron microscopes and the diameter of nanofibers was evaluated using image j software. In order to check the crystal structure of the examined samples, XRD test was used and also to check the thermal properties of the samples, TGA test was used. The results of the FTIR test show that the stretching frequency of the amide group and the stretching frequency of the alcohol group have shifted towards weak fields, the XRD test showed that the essence is present in the nanofibers in crystalline form. The results of the TGA test showed that the high thermal stability of gelatin nanofilms containing oregano essential oil is related to the interaction between gelatin and the essence, which causes a delay in the thermal degradation of gelatin nanofilms. The diameter of nanofibers obtained from electrospinning increased with increasing concentrations of oregano essential oil. In this research, on four bacteria, Escherichia coli, Staphylococcus aureus, Enterococcus faecalis, Bacillus cereus, the result was obtained that the electrospun fibers of zein with oregano essential oil had antimicrobial properties on the cheese.

keywords: Oregano essential oil, Escherichia coli, Staphylococcus aureus, Enterococcus faecalis, Bacillus cereus, cheese.