

## AN INVESTIGATION OF MOISTURE CONTENT, SOLUBILITY AND COLOR IN EDIBLE WHEY PROTEIN FILM INCORPORATED WITH OREGANO ESSENTIAL OILS

Parnia jahanmard\*, Mohamad fazel, Mahshid jahadi

*Department of Food science and technology, Islamic Azad University of Isfahan (Khorasgan), Iran  
parnia\_jahanmard@yahoo.com*

### ABSTRACT

Active packaging is one of the recent methods of packaging in food industry that designed because of its commercial properties and as a result of consumer demand for producing fresh and suitable food product with better qualities [1]. Antimicrobial packaging is a form of active packaging. In this kind of packaging, antimicrobial agent migrate slowly from the package to the surface of product [3]. Use of essential oils become usual because of their potential as a natural preservatives, wide range of their antimicrobial effects and their potential to control pathogens and food born bacteria in food material. Essential oils are extracted from many herbs and spices that oregano is one of the well-known of them because of their antioxidant and antimicrobial effect and in addition they have the anti-diabetic, anti-hypertensive, anti-inflammatory, cytotoxic effects [2]. In this study whey protein concentrate edible film with 1%-5% oregano essential oils was prepared. Moisture content and solubility were determined according to the method that described by Gounga et al (2007). A\*, b\* and L\* were determined by using hounterlab. All the analyses were carried out in triplicate for each sample. The data were analyzed statistically with SAS. The results indicate that using essential oils had no significant effect on Solubility. Films kept their structure during 24 hour immersion in water and they have relatively low solubility. There were significant differences between moisture content of treatments. Moisture content was at the range of 27.41%-30.26%. Changing color in treatments was significant. Using essential oils change color from green-yellow to red-blue. C\* differences was not significant. Lightness upon the level of 3% essential oils increased.

**Key words:** *active packaging, whey protein, Oregano, biodegradable packaging*

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