

# THE INFLUENCE OF CONTENT OF OREGANO ESSENTIAL OIL ON MICROSTRUCTURAL, ANTIOXIDANT, BARRIER AND ANTIMICROBIAL PROPERTIES OF CITRUS PECTIN-BASED EDIBLE FILMS

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In recent years, there is a growing interest to use biopolymer films or coatings as food packaging materials. Bio-based polymers such as polysaccharides, proteins, lipids and their composites could successfully replace petroleum-based materials due their biodegradability, abundantly distribution and renewability. The biopolymer films and coatings act as a passive barrier that protects food products from environmental factors such as ultraviolet light, oxygen, water vapor, pressure and heat. Pectin is an easily accessible polysaccharide in nature that is non-toxic, biodegradable and edible. Due to its gelation capacity, it is considered as good matrix for edible film production with application in food packaging. The incorporation of different additives like plasticizers, emulsifiers and cross-linking agents, as well as active compounds in pectin films could give them good water barrier, antimicrobial, mechanical and antioxidant properties.

The present study aims to develop pectin edible films based on citrus peel pectin and oregano (*Origanum vulgare* L.) essential oil. The oregano essential oil (OEO) was added to four final concentrations (0.05, 0.1, 0.5 and 1%). Polyethylene glycol 400 was used as a plasticizer and Tween<sup>®</sup> 80 was added as a surfactant. The results of microstructural, barrier, antioxidant, antibacterial and antifungal analyses of the OEO-pectin films were compared with control films (without OEO) to determine the effect of content of oregano essential oil on films properties. The obtained emulsions were also used to coat cut apples, in order to extend their freshness.