

## Cancer Immunology and Immunotherapy: Pancreatic Cancer awareness for better self -management

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### Abstract

A growing public interest on the environment due to the harmful effect of petroleum based plastic films has induced increasing research on biodegradable films as alternatives to conventional non-degradable plastics (Wang et al., 2015). Therefore, polyvinyl alcohol (PVA)/Starch-based biodegradable polymers are often researched on combinations of thermoplastic starch and PVA, plasticizer, cross-linker, filling materials and water. However, the bio-film products fabricated from starch and PVA lack of the mechanical properties and low moisture resistance (Riyajan and Sukhlaaied, 2012). The main aim of this chapter is to indicate the importance of exposing the additives, modification and formation processes of PVA/Starch films. In the framework of studies, the additives and modifications used to improve the mechanical, thermal and morphological properties of biobased films are plasticizers, physical and chemical treatment and natural raw materials as well as thermoplastic starch. Plasticizers are preferred for higher molecular dynamism because of more flexibility of functional groups in PVA and starch. Their flexibility is considerably affected by carboxyl and hydroxyl groups of plasticizers. The use of cofunctional groups increases the plasticity, flexibility and physicochemical and mechanical properties of bio-based films. Moreover, crosslinking modifications of plasticisers are also effective to enhance the properties of biobased films. These modifications improve the tensile strength, modulus of elasticity, water resistance, thermal resistance, swelling behavior and antibacterial of biobased films. Elasticity and other properties of biobased films are significantly affected by the functional groups (carboxyl and hydroxyl groups) of plasticizers. The using of co-hydroxyl/carboxyl group as a functional group increases the flexibility and physicochemical and mechanical properties of films.

**Keywords:** Polyvinyl alcohol, Starch, plasticiser, Mechanical property.

### Biography

M. Hakkı Alma is an Associate Professor in the Department of Forest Product Engineering, Kahramanmaraş Sutcu Imam University, Kahramanmaraş/Turkey

### Publications

1. Evaluation of phenolic contents and bioactivity of root and nutgall extracts from Iraqian Quercus infectoria Olivier
2. Ginger (Zingiber officinale Roscoe) for the treatment and prevention of necrotizing enterocolitis
3. Enrichment of the glycyrrhizic acid from licorice roots (Glycyrrhiza glabra L.) by isoelectric focused adsorptive bubble chromatography
4. Investigation of Volatile Constituents in Stachys amantica P.H. Davis and Stachys petrokosmos Rech. fil. Collected in Different Regions of Turkey
5. Chemical composition of seed oil from Turkish Prunus mahaleb L
6. Determination of phenolic compounds from Turkish kermes oak (Quercus coccifera L.) roots by high performance liquid chromatography; its antimicrobial activities
7. Karadeniz ve Akdeniz Bölgesinde Yetişen Defne (Laurus nobilis)'nin Kimyasal İçeriği

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