

## **Formulation and characterization of hydroxypropyl methylcellulose edible films containing grape seed extract**

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### **Abstract.**

The novel bio-composite edible films based on hydroxypropyl methylcellulose (HPMC) and grape seed extract (GSE) were developed. This study investigated the effect of GSE concentration on some physical and physico-chemical properties of the films. The physico-mechanical properties of the films were examined in tensile mode using an LS1 universal testing machine (Lloyd Instruments). It was found that the addition of GSE reduced the composite tensile strength. However, the hydrophobicity of the films increased, which is expressed in improved water vapor permeability and reduced moisture absorption. The surface topography and the roughness of the films were also examined by Atomic Force Microscopy (AFM). The thermal analysis was carried out by Differential Scanning Calorimetry (DSC 204F1 Phoenix (Netzsch Geratebau GmbH, Germany)). The results showed that the thermal stability of the films was slightly decreased through incorporation of the GSE. Finally, composite films demonstrated strong antioxidant activity. The obtained results suggest that the new composite films may be used as food active packaging.

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