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Mechanical and Light Transmittance Properties of Locust Bean Gum Based Edible Films

of

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Abstract: The behavior of locust bean gum (LBG) under heat was investigated by thermogravimetric (TG), differential thermogravimetric (DTG) and differential scanning calorimetric (DSC) methods. It was observed from the TG, DTG and DSC curves that LBG does not melt and is stable up to 300 °C, although exothermic degradation occurs at higher temperatures. The effect of the amount and molecular weight of polyethylene glycol (PEG) on the light transmittance and mechanical properties of these edible films was also examined. Haze increased and the luminous transmittance and total light transmittance values decreased with both the quantity and molecular weight of PEG. On the other hand, tensile strength and elongation decreased, but there was no regular relationship between the molecular weight of the PEG and the tensile strength of the films. It was concluded from the results of the mechanical and optical measurements that the most suitable plasticizer among the PEG plasticizers with different molecular weights is PEG 200 and that the maximum level for its use is 0.6 mL/0.7 g LBG in edible film formulations.

Key Words: Locust bean gum, Edible film, Plasticizer, Light transmittance, Mechanical properties

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