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Effects of the Tomato Pomace Oil Extract on Physical and Antioxidant Properties of Gelatin Films

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Abstract : Tomatoes are widely consumed as fresh and processed products through the manufacturing industry. Therefore, tomato pomace is generated as a by-product accounting for about 5-13% of the whole tomato. Antioxidants still remain in tomato pomace and extraction of tomato oil may useful in edible film production. The edible film solution was prepared by mixing gelatin (2, 4 and 6%) with the distilled water and heating at 40oC for 30 min. Effect of tomato pomace oil was evaluated at 0, 0.5 and 1%. Film solution was poured in plate and dried overnight at 40oC before determining the physical properties, which are tensile strength, moisture content, color, solubility, and swelling power. The results showed that an increase gelatin concentration caused increasing of tensile strength, moisture content, solubility and swelling power. The edible film with tomato pomace oil extract appeared as the rough film with oil droplet dispersion. The addition of tomato pomace oil extract caused an increase in lightness, redness and yellowness, while tensile strength, moisture content, and solubility were decreased. Film with tomato pomace oil extract at 0.5 and 1% exhibited antioxidant properties but those properties were not significantly different ($p<0.05$) between film incorporated with tomato pomace oil extract 0.5 and 1%. The suitable condition for film production in this study, 4% of gelatin and 0.5% of tomato pomace oil extract, was selected for protecting oxidation of palm oil. At 15 days of the storage period, the palm oil which covered by gelatin film with tomato pomace oil extract had 22.45 milliequivalents/kg of peroxide value (PV), while, the palm oil which covered by polypropylene film and control had 24.79 and 26.67 milliequivalents/kg, respectively. Therefore, incorporation of tomato pomace oil extract in gelatin film was able to protect the oxidation of food products with high fat content.

Keywords : antioxidant, gelatin films, physical properties, tomato oil extract
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