



INTISARI

Penelitian ini bertujuan untuk mengetahui komposisi kimia, gugus fungsi dan sifat terhadap CaCl_2 ekstrak daun janggolan; mengetahui pengaruh konsentrasi ekstrak daun janggolan dan asam stearat terhadap sifat mekanik dan penghambatan *edible film* terhadap laju transmisi uap air, serta mengetahui kemampuan *edible film* dalam mempertahankan susut berat buah anggur hitam.

Penelitian ini dibagi menjadi empat tahap. Tahap pertama merupakan tahap ekstraksi dan karakterisasi ekstrak daun janggolan. Tahap kedua dan ketiga merupakan tahap pembuatan *edible film* dengan variasi konsentrasi ekstrak daun janggolan dan asam stearat. *Edible film* dibuat dengan konsentrasi ekstrak daun janggolan 0,25 % - 1,25 % b/v, tapioka 1 % b/v, dan gliserol 0,5 % b/v. Formula *edible film* yang memiliki nilai laju transmisi uap air terkecil digunakan untuk pembuatan *edible film* pada tahap berikutnya dengan penambahan asam stearat. Konsentrasi asam stearat sebesar 0; 10; 20; 30; dan 40 % b/b ekstrak daun janggolan ditambahkan ke dalam *edible film*. Formula *edible film* yang memiliki nilai laju transmisi uap air terkecil digunakan untuk tahap ke empat atau tahap aplikasi. Tahap aplikasi dilakukan dengan *wrapping* dan *coating edible film* pada buah anggur hitam dan dilakukan pengamatan susut berat buah anggur hitam selama lima hari penyimpanan.

Hasil penelitian menunjukkan ekstrak daun janggolan memiliki kadar air 9,66 %, protein 2,21 %, lemak 0,15 %, abu 24,87 %, serat 2,26 %, karbohidrat 59,44 %, dan rendemen sebesar 19,72 %. Ekstrak daun janggolan mengandung gugus fungsi C=O, O-H, C-O, C-H dan ikatan glikosidik. Penambahan 4 – 8 mM CaCl_2 menaikkan viskositas suspensi ekstrak daun janggolan-tapioka dari 147 mPa menjadi 295 mPa. Peningkatan konsentrasi ekstrak daun janggolan menyebabkan kenaikan ketebalan, kuat regang putus, dan kelarutan namun menurunkan laju transmisi uap air dan pemanjangan *edible film*. Peningkatan konsentrasi asam stearat menyebabkan kenaikan ketebalan namun menurunkan kuat regang putus, kelarutan, dan laju transmisi uap air *edible film*. Penggunaan *wrapping* dan *coating edible film* mampu menurunkan susut berat buah anggur hitam sebesar 0,6285 g/hari dengan *coating* dan 0,5387 g/hari dengan *wrapping edible film*.



ABSTRACT

The objectives of this research were to investigate: 1) Chemical composition, fungsional groups and properties of *janggelan* leaves extract to CaCl_2 , 2) Influence of *janggelan* leaves extract concentration and stearic acid to mechanical and barrier properties of edible film, and 3) Evaluate the effect of coating and wrapping on moisture losses of black grape.

This research was divided into four steps. The first step was extraction and characterization of *janggelan* leaves extract. The second and third steps were making edible film from various concentration of *janggelan* leaves extract and stearic acid. Edible film was made from 0.25% - 1.25% (w/v) of *janggelan* leaves extract, 1% (w/v) of tapioca starch, 0.5% (w/v) of glycerol. Edible film formula which showed the lowest wvtr used for next step. 0, 10, 20, 30, or 40 % (w/w) of stearic acid was added to the edible film formula. The edible film which showed the lowest wvtr then used to the application step. The weight losses of black grapes which had wrapped and coated by edible film, was investigated in five days of storage.

Proximate analysis of *janggelan* leaves extract showed that moisture, protein, lipid, ash, crude fiber, carbohydrate content, and yield were 9.66%, 2.21%, 0.15%, 24.87%, 2.26%, 59.44%, and 19.72% respectively. The Fungsional groups were C=O, O-H, C-O, C-H and glycosidic binding. Adding CaCl_2 from 4 – 8 mM could increase the viscosity of *janggelan* leaves extract-tapioca suspension. Increasing *janggelan* leaves extract concentration resulted in increasing thickness, tensile strength, and solubility, but decreasing wvtr and elongation of the edible film. Increasing stearic acid concentration resulted in increasing thickness, but decreasing tensile strength, solubility, and wvtr of the edible film. Edible film wrapping and coating could reduce weight losses of black grapes, as much as 0.6285 g/d for edible film coating and 0.5387 g/d for edible film wrapping.

Key words: *janggelan* leaves extract, stearic acid, edible film, wrapping, coating.