RINGKASAN

Kopi termasuk tanaman yang menghasilkan limbah hasil sampingan pengolahan berupa kulit kopi yang cukup besar yaitu 50-60%. Produksi kopi di Indonesia pada tahun 2018 mencapai 756.051 ton dengan proporsi 81% kopi robusta dari total keseluruhan produksi kopi. Tingginya limbah kulit kopi yang dihasilkan perlu adanya pemanfaatan yang maksimal. Salah satu pemanfaatanya adalah dijadikan sebagai bahan penyusun *edible film*. Kulit kopi memiliki kandungan pektin berkisar antara 27,20-57,24%. Pektin merupakan salah satu bahan penyusun *edible film*. *Edible film* merupakan salah satu jenis kemasan pangan yang berbentuk lapisan tipis yang aman dikonsumsi. *Edible film* berbahan pektin memiliki beberapa kelebihan, yaitu memiliki kuat tarik yang baik dan menurunkan laju transmisi uap air. Di sisi lain, *edible film* pektin memiliki kelemahan, yaitu bersifat keras, rapuh, dan tingkat elongasi yang rendah sehingga perlu adanya penambahan bahan lain, seperti glukomanan dan sorbitol untuk memperbaiki kelemahan tersebut. Glukomanan memiliki sifat istimewa di antaranya membentuk massa kental yang lekat dalam air dingin, membentuk lapisan tipis yang mempunyai sifat tembus pandang, membentuk *edible film* tidak kaku, elastisitas kuat, dan dapat melarut kembali dalam air. Penambahaan sorbitol akan meningkatkan elastisitas dan fleksibitilas *edible film*. Penelitian ini bertujuan untuk mengetahui pengaruh rasio pektin:glukomanan terhadap karakteristik *edible film*, mengetahui pengaruh penambahan sorbitol terhadap karakteristik *edible film*, serta mengetahui interaksi antara perlakuan rasio pektin:glukomanan dan penambahan sorbitol terhadap karakteristik *edible film*.

Penelitian ini menggunakan Rancangan Acak Lengkap (RAL). Faktor yang diteliti meliputi rasio pektin:glukomanan (R) terdiri dari 3 taraf yaitu 1:4 (R1), 2:3 (R2), dan 3:2 (R3); penambahan sorbitol (K) terdiri dari 3 taraf yaitu 1,5 ml (K1), 3 ml (K2), dan 4,5 ml (K3). Variabel yang diamati terdiri dari uji ketebalan, kelarutan, dan laju transmisi uap air. Ketiga variabel tersebut dilakukan Uji Indeks Efektivitas, hasil terpilih dilakukan uji elongasi dan kuat tarik. Data variabel ketebalan, kelarutan, dan laju transmisi uap air dianalisis menggunakan uji analisis ragam (ANOVA) dan diuji lanjut *Duncan Multiple Range Test* taraf 5%.

Hasil penelitian menunjukkan bahwa (1) *edible film* dengan rasio pektin yang lebih tinggi dibandingkan glukomanan akan meningkatkan ketebalan. Peningkatan rasio pektin:glukomanan (2:3) dan (3:2) menghasilkan kelarutan dan laju transmisi uap air lebih rendah. (2) Semakin tinggi penambahan *plasticizer* sorbitol, semakin tinggi nilai ketebalan, kelarutan, dan laju transmisi uap air *edible film*. (3) Berdasarkan hasil Uji Indeks Efektivitas diperoleh perlakuan terpilih, yaitu *edible film* dengan rasio pektin:glukomanan (3:2) dan penambahan sorbitol 1,5 ml (R3K1) dengan ketebalan 0,11 mm, kelarutan 72,3%, nilai laju transmisi uap air 5,775 gram/m^2, nilai kuat tarik 2,0518 Mpa, dan nilai elongasi 13,7138%.

SUMMARY

Coffee is a plant that produces a large amount of processing waste in the form of coffee husks, which is 50-60%. Coffee production in Indonesia in 2018 reached 756,051 tons with a proportion of 81% robusta coffee from the total coffee production. The high waste of coffee husks produced requires maximum utilization. One of its uses is used as an ingredient in edible films. Coffee peels contain pectin ranging from 27.20-57.24%. Pectin is one of the building blocks of edible film. An edible film is a type of food packaging in the form of a thin film that is safe for consumption. An edible film made from pectin has several advantages, namely having good tensile strength and reducing the rate of water vapor transmission. On the other hand, pectin edible film has weaknesses, namely, it is hard, brittle, and has a low level of elongation, so it is necessary to add other ingredients, such as glucomannan and sorbitol to fix these weaknesses. Glucomannan has special properties, including forming a viscous mass that is sticky in cold water, forming a thin layer that has transparent properties, forming an edible film that is not rigid, has strong elasticity, and can dissolve in water. The addition of sorbitol will increase the elasticity and flexibility of the edible film. This study aims to determine the effect of the pectin: glucomannan ratio on the characteristics of the edible film, to determine the effect of the addition of sorbitol on the characteristics of the edible film, and to determine the interaction between the treatment of the pectin: glucomannan ratio and the addition of sorbitol to the characteristics of the edible film.

This study used a completely randomized design (CRD). The factors that will be studied included the ratio of pectin: glucomannan (R) consisting of 3 levels, namely 1: 4 (R1), 2: 3 (R2), and 3: 2 (R3); The addition of sorbitol (K) consists of 3 levels, namely 1.5 ml (K1), 3 ml (K2), and 4.5 ml (K3). At the same time, the variables that will be observed consisted of thickness, solubility, and water vapor transmission rates. The three variables were tested for the Effectiveness Index Test, the results selected were tested for elongation and tensile strength. Data on thickness, solubility, and water vapor transmission rates were analyzed using the analysis of variance test (ANOVA) and further tested by the Duncan Multiple Range Test at the 5% level.

The results showed that (1) edible film with a higher pectin ratio than glucomannan would increase the thickness. Increasing the pectin: glucomannan ratio (2: 3) and (3:2) obtain lower water vapor solubility and water vapor transmission rate. (2) The higher the addition of sorbitol to the edible film will increase the thickness, solubility, and water vapor transmission rate. (3) Based on the results of the Effectiveness Index Test, the selected treatment was obtained, that is the edible film with pectin: glucomannan ratio (3: 2) and the addition of sorbitol 1.5 ml (R3K1) with a thickness of 0.11 mm, 72.3% solubility, rate of value. water vapor transmission 5,775 gram / m2, tensile strength value 2,0518 Mpa, and elongation value 13,7138%.