

RINGKASAN

Pengemasan produk bubuk seperti minuman cokelat instan sebagian besar menggunakan plastik. Penggunaan kemasan plastik yang banyak dapat menyumbang sampah yang tidak dapat didaur ulang (*non-biodegradable*). Oleh karena itu, *edible film* dikembangkan sebagai solusi kemasan *biodegradable*. Pada penelitian ini *edible film* dibuat dengan menggunakan bahan pektin kulit jeruk dan isolat protein kedelai atau *isolated soy protein* (ISP) dengan variasi jenis *plasticizer* yang berbeda. Penelitian ini bertujuan untuk 1) mempelajari karakteristik *edible film* dari pektin kulit jeruk dan ISP, 2) menentukan perlakuan terbaik dari kombinasi perlakuan rasio pektin : ISP dan jenis *plasticizer*, serta 3) mempelajari pengaruh aplikasi *edible film* pektin kulit jeruk dan ISP terhadap sensori minuman cokelat dan mutu bubuk minuman cokelat selama penyimpanan 10 hari.

Rancangan percobaan menggunakan rancangan acak lengkap (RAL) dengan 9 perlakuan, 3 ulangan, dan sebanyak 27 unit percobaan. Pengukuran terhadap karakteristik *edible film* dilakukan terhadap ketebalan, kelarutan, dan laju transmisi uap air (WVTR). Tiga perlakuan terbaik dilakukan penelitian lanjut untuk diaplikasikan pada bubuk minuman cokelat instan dan disimpan selama 10 hari. Pada saat pengaplikasian *edible film* dilakukan pengujian pada bubuk minuman cokelat meliputi uji hedonik (warna, rasa, aroma, homogenitas, kekentalan, dan *overall acceptance*), kadar air, kadar asam lemak bebas (FFA), pengukuran berat dan warna bubuk minuman cokelat.

Hasil penelitian menunjukkan bahwa rasio pektin : ISP dan jenis *plasticizer* yang digunakan berpengaruh nyata terhadap ketebalan, kelarutan, dan WVTR *edible film*. Ketebalan *edible film* yang dihasilkan yaitu 0,699-0,142 mm, kelarutan *edible film* yang dihasilkan berkisar 32,67-83,33% dan nilai WVTR berkisar 3.93 - 19.43 g/m²/jam. Hasil penelitian juga menunjukkan bahwa *edible film* memengaruhi sensori minuman cokelat secara lebih baik serta memengaruhi kemampuan *film* dalam menghambat peningkatan kadar air, kadar FFA, serta menekan perubahan berat dan warna.

SUMMARY

The packaging of powdered products, such as instant chocolate drinks, is largely made of plastic. Excessive use of plastic packaging contributes to non-biodegradable waste. Therefore, edible film was developed as a biodegradable packaging solution. In this study, edible film was made using orange peel pectin and isolated soy protein (ISP) with various types of plasticizers. This study aimed to: 1) study the characteristics of edible film made from orange peel pectin and ISP; 2) determine the best combination of pectin:ISP ratio and plasticizer type; and 3) study the effect of applying edible film made from orange peel pectin and ISP on the sensory quality of chocolate drinks and the quality of chocolate drink powder during 10 days of storage.

The experiment used a completely randomized design (CRD) with 9 treatments, 3 replications, and 27 experimental units. Measurements of the edible film's thickness, solubility, and water vapor transmission rate (WVTR) were carried out. The three best treatments were further studied for application to instant chocolate drink powder, which was stored for 10 days. During the application of the edible film, testing was conducted on the chocolate drink powder, including hedonic testing (color, taste, aroma, homogeneity, viscosity, and overall acceptability), water content, free fatty acid (FFA) content, and weight and color measurements.

The results showed that the pectin:ISP ratio and the type of plasticizer used significantly affected the thickness, solubility, and WVTR of the edible film. The resulting edible film thickness was 0.699-0.142 mm, with solubility ranging from 32.67-83.33%, and WVTR values ranging from 3.93-19.43 g/m²/hour. The results also indicated that the edible film significantly affected the sensory characteristics of the chocolate drink and its ability to inhibit increases in water content and FFA content, as well as suppress changes in weight and color.