

ABSTRAK

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KARAKTERISASI *EDIBLE COATING* DARI PATI BIJI MANGGA ARUMANIS DAN APLIKASINYA TERHADAP BUAH APEL Skripsi, Fakultas Sains dan Teknologi (2021).

(xiv + 95 halaman; 24 gambar; 8 tabel; 13 lampiran)

Sejalan dengan produksinya, mangga menghasilkan limbah biji yang mencapai 15-20% dari buahnya. Pembuatan *edible film* dan *coating* dari tepung pati biji mangga Arumanis dilakukan dalam rangka pengolahan dan pemanfaatan limbah bijinya. Rendemen tepung pati biji mangga yang dihasilkan sebesar $14,28\% \pm 0,17$ dengan derajat putih $73,64 \pm 0,11$ dan kadar air $8,40\% \pm 0,02$. Kadar pati yang dihasilkan sebesar $76,43\% \pm 1,32$ dengan kadar amilosa $26,08\% \pm 0,34$, dan kadar amilopektin $50,35\% \pm 0,02$. *Edible film* dibuat terlebih dahulu agar dapat dianalisis untuk menentukan rasio penambahan *plasticizer* gliserol:asam stearat terbaik. Sampel dianalisis menggunakan parameter analisis berupa kuat tarik, elongasi, WVTR, ketebalan *film*, dan daya larut *film*. Pati biji mangga Arumanis dicampurkan pada larutan *edible film*, serta diberi penambahan *plasticizer* gliserol dengan konsentrasi 1,0; 1,5; 2,0; 2,5 (%b/b total). Selain itu, asam stearat juga ditambahkan dengan konsentrasi 0 (kontrol); 1,5; 3,0 (%b/b total). Rasio konsentrasi terpilih untuk ditambahkan pada proses pembuatan *edible coating* adalah rasio gliserol:asam stearat sebesar 2,0% (b/b):1,5% (b/b) yang memiliki nilai kuat tarik sebesar $10,73 \pm 0,43 \times 10^{-4}$ MPa, nilai elongasi sebesar $67,63\% \pm 7,27$, nilai WVTR sebesar $0,20 \pm 0,01$ g.mm/m².jam dengan ketebalan *film* sebesar $0,11 \pm 0,01$ mm, dan nilai daya larut sebesar $26,35\% \pm 0,71$. *Edible coating* diaplikasikan pada apel Manalagi pada penelitian ini. Apel Manalagi merupakan varietas lokal unggulan yang paling banyak diminati karena kandungan gulanya yang tinggi bahkan sebelum matang, namun laju kerusakannya lebih cepat karena laju etilennya yang lebih tinggi daripada apel varietas lokal lainnya. Sampel apel kontrol dan yang dilapisi *edible coating* disimpan selama 9 hari pada suhu ruang (20-25°C) dan setiap 3 hari dianalisis menggunakan parameter analisis, meliputi susut bobot, kekerasan buah, kadar vitamin C, pH, dan total padatan terlarut. Hasil akhir penelitian menunjukkan bahwa lama penyimpanan menghasilkan penurunan kualitas buah, serta dengan perlakuan *edible coating* yang melapisi buah apel Manalagi dapat menghambat kerusakan dan penurunan kualitas buah dibandingkan perlakuan kontrol.

Kata Kunci : *Edible coating*, pati biji mangga Arumanis, konsentrasi gliserol, konsentrasi asam stearat, lama penyimpanan
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ABSTRACT

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CHARACTERIZATION OF EDIBLE COATING FROM MANGO SEED KERNEL STARCH *var.* ARUMANIS AND ITS APPLICATION ON APPLE
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In line with its production, mango produces seed waste that reaches 15-20% of its fruit. The making of edible film and coating from Arumanis mango seed kernel starch flour is carried out in the context of processing and utilization waste seeds. The yield of mango seed kernel starch flour was $14,28\% \pm 0,17$ with $73,64 \pm 0,11$ whiteness index and $8,40\% \pm 0,02$ moisture content. The starch content was $76,43\% \pm 1,32$ with $26,08\% \pm 0,34$ amylose content, and $50,35\% \pm 0,02$ amylopectin content. Edible film is made beforehand in order to be analyzed to determine the best formulation ratio of glycerol plasticizer:stearic acid addition. Samples were analyzed using analysis parameters such as tensile strength, elongation, WVTR, film thickness, and film solubility. The Arumanis mango seed kernel starch flour was mixed in an edible film solution, and added with glycerol plasticizer concentration of 1,0;1,5;2,0;2,5% (w/w total). In addition, stearic acid was also added with concentration of 0 (control);1,5;3,0% (w/w total). Edible film made with the formulation ratio of glycerol:stearic acid in the amount of 2,0% (w/w):1,5% (w/w) produced good characteristics film and chosen as the selected formulation ratio which has a tensile strength value of $10,73 \pm 0,43 \times 10^{-4}$ MPa, the elongation value is $67,63\% \pm 7,27$, the WVTR value is $0,20 \pm 0,01$ g.mm/m².hour with the film thickness of $0,11 \pm 0,01$ mm, and film solubility value of $26,35\% \pm 0,71$. Edible coating was applied to Manalagi apples in this study which are the superior local varieties that are most in demand because of their high sugar content even before they are ripe, however, the rate of fruit quality decreases is faster because of their higher ethylene rate than other local varieties of apples. Apple samples coated with edible coating and control apples were stored for 9 days at room temperature (20-25°C) and the samples were analyzed every 3 days using analysis parameters such as weight loss, hardness, vitamin C content, pH value and total dissolved solids. The final results from the analysis showed that the storage time resulted in a decrease in fruit quality and with the edible coating treatment on Manalagi apples could inhibit the fruit damage and inhibit the fruit quality decreases compared to the control treatment on Manalagi apples.

Keywords : Edible coating, mango seed kernel starch, glycerol formulation, stearic acid formulation, storage time
References : 91 (2000-2020)