

**ANALISIS PERUBAHAN KUALITAS STROBERI (*Fragaria x ananassa*)
c.v. *Kellybright* SEGAR PADA LINGKUNGAN TROPIS DENGAN *EDIBLE COATINGS***

Putri Wahyuni. S¹⁾, Jumeri Mangunwikarta²⁾, Moh. Affan Fajar Falah²⁾

Departemen Teknologi Industri Pertanian, Fakultas Teknologi Pertanian,
Universitas Gadjah Mada

Jalan Flora No. 1 Bulaksumur, Yogyakarta, Indonesia

E-mail: putri_wahyunis@mail.ugm.ac.id

INTISARI

Stroberi sangat rentan terhadap kerusakan mekanis, gangguan fisiologis, dan infeksi yang disebabkan oleh berbagai patogen. Pascapanen stroberi di daerah tropis, negara berkembang dengan pendapatan menengah ke bawah belum maksimal dan sebagian besar dilakukan secara konvensional. Stroberi biasanya dijual tanpa pengendalian suhu yang menyebabkan kerusakan dan penurunan kualitas dalam jumlah besar. Tujuan penelitian adalah mengetahui pengaruh alginat *coating* dan antimikrobia alginat *coating* terhadap perubahan karakteristik mutu secara fisik (susut bobot, warna, tekstur), kimia (aroma, total padatan terlarut, kandungan vitamin C) dan mikrobiologi (*total yeast and molds*, mikroorganisme aerobik mesofilik) buah stroberi segar pada lingkungan tropis, membandingkan alginat *coating* dan antimikrobia alginat *coating* dengan pendekatan statistik dan menilai kelayakan penggunaan alginat *coating* dan antimikrobia alginat *coating* berdasarkan nilai *profitability index*.

Alginat *coating* dibuat menggunakan CMC 0,1%(w/v), sodium alginat 2%(w/v), gliserol 0,5%(v/v), dan asam stearat 0,5% (w/v). Agen antimikrobia dibuat dengan mencampurkan *cinnamon essential oil* 0,5%(v/v) dan Tween 20 0,2%(v/v). Atribut fisik, kimia, dan mikrobiologi sampel telah diuji selama masa penyimpanan dalam keadaan tropis pada suhu (27±2)°C. Data dianalisis dengan pengujian ANOVA dan dilanjutkan dengan *post-hoc Tukey test* dalam tiga kali pengulangan tiap pengujian.

Alginat *coating* yang diperkaya dengan minyak essential kayu manis terbukti efektif mempertahankan semua karakteristik fisik dan mikrobiologi, dilain hal pelapis edibel dengan alginat saja terbukti bekerja lebih baik mencegah penurunan kandungan vitamin C dan juga memperoleh tingkat preferensi aroma yang lebih baik. Berdasarkan hasil pengujian atribut kualitas secara keseluruhan (P<0.05), stroberi pada lingkungan tropis lebih awet ketika dilapisi alginat *coating* yang diperkaya minyak essential kayu manis. Aplikasi *edible coating* layak secara ekonomi dengan *profitability index* (PI) > 1.

Kata kunci: agen antimikrobia, atribut kualitas, *Fragaria x ananassa*, pelapis edibel, tropis

¹⁾ Mahasiswa Departemen Teknologi Industri Pertanian, Universitas Gadjah Mada

²⁾ Staff Pengajar Departemen Teknologi Industri Pertanian, Universitas Gadjah Mada

QUALITY CHANGES ANALYSIS OF FRESH STRAWBERRY (*Fragaria x ananassa*) c.v. *Kellybright* UNDER TROPICAL CONDITION WITH EDIBLE COATINGS

Putri Wahyuni. S¹⁾, Jumeri Mangunwikarta²⁾, Moh. Affan Fajar Falah²⁾

Department of Agro-industrial Technology, Faculty of Agricultural Technology,
Universitas Gadjah Mada

Jalan Flora No. 1 Bulaksumur, Yogyakarta, Indonesia

E-mail: putri_wahyunis@mail.ugm.ac.id

ABSTRACT

Strawberry has a very short shelf-life and senescence period due to its susceptibility to mechanical injury, excessive texture softening, physiological disorders and infection caused by several pathogens. Postharvest treatments of strawberries in the tropics, lower-middle income, and developing countries are not deal and are mostly conducted in conventional ways. Strawberries are usually sold without any temperature control, leading to fast ripening and massive quality losses, and creating substantial challenges for strawberries commercialization. Aims of this study are to evaluate the effects of alginate coatings and antimicrobial alginate coatings on physical (weight loss, firmness, color (L^* , a^* , b^*), chemical (soluble solids content, vitamin C loss, acidity level, odor). Microbiological (total yeast and molds, and total mesophilic microorganisms) quality changes on fresh strawberries in the tropics, to compare the alginate coatings and antimicrobial alginate coatings with statistical approach, and to assess the economic feasibility based on profitability index value.

Alginate coatings were prepared by dissolving sodium alginate 2%(w/v), glycerol 0.5%(v/v), CMC 0.1%(w/v), and stearic acid 0.5% (w/v). Antimicrobial agent was prepared by homogenizing cinnamon essential oil 0.5%(v/v) and Tween 20 0.2%(v/v). Physical, chemical, microbiological attributes were analyzed during storage under tropics condition at $(27\pm 2)^\circ\text{C}$. Statistical analysis was performed using ANOVA continued by Tukey test with triplicates.

Alginate coatings enriched with *Cinnamomum burmannii* essential oil was effective to maintain all physical and microbiological quality attributes, while alginate coatings alone were better to prevent vitamin C loss and showed better preference rate of odor. Overall ($P < 0.05$), strawberry stored under tropics condition appeared to be better preserved by alginate coatings enriched with cinnamon essential oil. Application of edible coating economically feasible where profitability index (PI) > 1 .

Keywords: antimicrobial agent, edible coating, *Fragaria x ananassa*, quality attributes, tropic

¹⁾ Student of Agro-industrial Technology Department , Universitas Gadjah Mada

²⁾ Staff Lecturer of Agro-industrial Technology Department, Universtas Gadjah Mada