

**TEKNIK PROSES DAN KARAKTERISASI FISIK COKELAT BATANG  
COUVERTURE DENGAN PENAMBAHAN HIDROGEL KARAGENAN  
DAN PEMANIS GULA SUKROSA YANG DISIMPAN PADA  
BERBAGAI JENIS KEMASAN DAN  
KONDISI PENYIMPANAN**

**INTISARI**

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Cokelat merupakan makanan yang cukup banyak diminati seluruh kalangan masyarakat karena keunikan citarasanya juga manfaat kesehatan yang ditawarkan dari kandungan polifenol yang tinggi. Cokelat termasuk produk pangan yang sensitif terhadap panas dan mudah meleleh pada suhu 32–34°C. Permasalahan lebih lanjut adalah terbentuknya *bloom* akibat kondisi penyimpanan tidak tepat. Penelitian ini bertujuan untuk mengkaji pengaruh jenis kemasan dan kondisi penyimpanan terhadap karakteristik fisik cokelat hitam *couverture* yang diformulasikan dengan penambahan hidrogel berbasis karagenan melalui metode eksperimen. Perlakuan yang diberikan adalah variasi jenis kemasan (kombinasi *aluminium foil* dengan kertas karton, kertas *wax* dengan kertas karton, dan plastik *wrap* dengan kertas karton) serta kondisi penyimpanan (suhu dingin dan suhu ruang). Parameter kualitas cokelat yang diuji meliputi kadar air, warna, *glossiness*, kekerasan, titik leleh, dan ukuran partikel yang dilakukan setiap interval 10 hari selama 60 hari penyimpanan.

Hasil penelitian menunjukkan bahwa perlakuan jenis kemasan dan kondisi penyimpanan berpengaruh signifikan ( $p < 0.05$ ) terhadap seluruh parameter kualitas cokelat. Cokelat yang dikemas dengan kombinasi *aluminium foil* dan kertas karton serta disimpan pada suhu dingin memiliki kualitas terbaik diantara seluruh sampel. Perubahan kadar air, *lightness*, kekerasan, titik leleh, dan ukuran partikel cokelat menunjukkan laju meningkat selama penyimpanan, sedangkan *glossiness* menunjukkan laju menurun. Seluruh sampel cokelat memiliki kadar air berkisar 1,6–3,2%, *lightness* berkisar 19,33–26,05, kekerasan berkisar 7–21 N/mm<sup>2</sup>, titik leleh berkisar 34–37,5°C, dan ukuran partikel berkisar 18–34 µm. Komponen warna lainnya (*redness*, *yellowness*, *chroma*, dan *hue*) memiliki nilai yang cenderung fluktuatif. Nilai *redness*, *yellowness*, *chroma*, dan *hue* cokelat berturut-turut berkisar antara 4,52–7,02; 4,62–6,45; 6,6–9,4 dan 37°–48°.

Kata kunci: cokelat, hidrogel, jenis kemasan, penyimpanan

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***TECHNIQUE OF PROCESS AND PHYSICAL CHARACTERIZATION OF  
COUVERTURE CHOCOLATE BARS WITH ADDITION OF  
CARRAGEENAN HYDROGEL AND SUCROSE SWEETENER  
STORED AT VARIOUS PACKAGING TYPES AND  
STORAGE CONDITIONS***

***ABSTRACT***

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Chocolate is a food that is highly favored by consumers because of its unique flavor as well as the health benefits offered by its high polyphenol content. Chocolate tends to be a heat-sensitive food product that melts easily at 32–34°C. A further issue is the formation of blooms due to improper storage conditions. This study aims to analyze the effect of packaging type and storage conditions on the physical characteristics of dark chocolate couverture formulated with carrageenan-based hydrogel through an experimental method. The treatments carried out were variations of packaging type (combination of aluminium foil with paperboard, waxed paper with paperboard, and plastic wrap with paperboard) and storage conditions (cool and room temperature). The chocolate quality parameters were measured including moisture content, color, glossiness, hardness, melting point, and particle size were observed at intervals of 10 days for 60 days of storage.

The results showed that the packaging type and storage conditions had a significant ( $p < 0.05$ ) effect on all chocolate quality parameters. Chocolate packaged with a combination of aluminium foil and paperboard which stored at cool temperature had the best quality among all samples. Changes in moisture content, lightness, hardness, melting point, and particle size of chocolate showed an increasing rate during storage, while glossiness showed a decreasing rate. The moisture content of chocolate ranged from 1,6–3,2%, lightness ranged from 19,33–26,05, hardness ranged from 7–21 N/mm<sup>2</sup>, melting point ranged from 34–37,5°C, and particle size ranged from 18–34 µm. The values of other color components (redness, yellowness, chroma, and hue) tend to fluctuate. The redness, yellowness, chroma, and hue values of chocolate ranged from 4,52–7,02; 4,62–6,45; 6,6–9,4 and 37°–48°, respectively.

Keywords: chocolate, hydrogel, type of packaging material, storage

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