

ABSTRACT

EFFECT COPIGMENTS CATECHOL AND TANNIN ON STABILITY OF ANTHOCYANIN COLOR FROM EXTRACT GLUTINOUS BLACK RICE BRAN (*Oryza sativa glutinosa*)

By

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Extract glutinous black rice bran contains anthocyanins. The application of anthocyanins as a natural dyes is necessary to be examined due to its unstability. Copigmentation method can improve the stability of anthocyanins during storage. Catechol and tannin can be used as a copigment to stabilize the color of anthocyanins. This reseach aims were (a) to determine the effect of copigment types to the copigmented anthocyanins color; (b) to identify the best molar ratio of catechol during storage; c) to identify the best molar ratio of tannins during storage.

Research method was arranged using factorial Randomized Complete Block Design (RCBD) with three replications. First factor were molar ratio 0:1, 50:1, 100:1; and second factor were time of storage 0, 10, 20, 30, 40 days at temperature ($28^{\circ} \pm 2^{\circ}\text{C}$). Variables observed and determined were the bathochromic and hiperkormik effects, the changes of anthocyanin concentration during storage, color retention, and half-life. The bathochromic and hyperchromic effects and half-life were analyzed descriptively. Another variables were analyzed by Tuckey test, Bartlet test, and Polynomial Orthogonal test.

The results showed that the anthocyanin content of extract glutinous black rice bran contains was 426 mg/100g. Catechol copigment affected the bluish color (hypsochromic), while tannins copigment affected the reddish color (bathochromic) after copigmentation. The best molar ratio of catechol copigment was 50: 1 with the decrease of anthocyanin concentration of 0,35mM/day or 39,29mg/100g/day, the rate of color retention was 12.78%/hour, and the half-life was 8.66 hours. The best molar ratio of tannins copigment was 100: 1 with the decrease of anthocyanin concentration of 0,07mM/day or 7,86mg/100g/day, the rate of color retention was 2.39%/day, and the half-life of 19.80 hours.

Key words: Copigmentation. catechol, tannin, anthocyanins, glutinous black rice bran

ABSTRAK

PENGARUH KOPIGMENT KATEKOL DAN TANIN TERHADAP STABILITAS WARNA ANTOSIANIN EKSTRAK BEKATUL KETAN BERAS HITAM (*Oryza sativa glutinosa*)

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Ekstrak bekatul beras ketan hitam mengandung antosianin. Penggunaan antosianin sebagai bahan pewarna alami perlu dipelajari lebih lanjut karena sifatnya yang kurang stabil. Metode kopigmentasi dapat digunakan untuk memperbaiki stabilitas antosianin selama penyimpanan. Katekol dan tanin dapat digunakan sebagai kopigmen untuk menstabilkan warna antosianin. Penelitian ini bertujuan untuk a) mengetahui pengaruh jenis kopigmen terhadap warna antosianin terkopigmentasi; b) mengetahui rasio molar katekol terbaik selama penyimpanan; c) mengetahui rasio molar tanin terbaik selama penyimpanan.

Metode penelitian disusun menggunakan Rancangan Acak Kelompok Lengkap (RAKL) faktorial dengan tiga ulangan. Faktor pertama adalah rasio molar 0:1, 50:1, 100:1, dan faktor kedua adalah lama penyimpanan selama 0, 10, 20, 30, 40 hari. Data hasil pengamatan diamati menggunakan efek batokromik dan hiperkromik, perubahan konsentrasi antosianin selama penyimpanan, retensi warna, dan waktu paruh. Efek batokromik dan hiperkromik, dan waktu paruh dianalisis secara deskriptif. Data lainnya dianalisis menggunakan uji Tuckey, uji Bartlett dan uji Polinomial Ortogonal.

Hasil penelitian menunjukkan kandungan antosianin awal adalah 426 mg/100 g. Kopigmen katekol memberikan pengaruh warna kebiruan (hipsokromik), sedangkan kopigmen tanin memberikan warna kemerahan (bathokromik) setelah proses kopigmentasi antosianin ekstrak bekatul beras ketan hitam (*Oryza sativaglutinosa*). Rasio molar terbaik pada kopigmen katekol adalah 50:1 dengan penurunan konsentrasi antosianin sebesar 0,35mM/hari atau 39,29mg/100g/hari, laju penurunan retensi warna sebesar 12,78%/hari, dan waktu paruh 8,66 jam. Rasio molar terbaik pada kopigmen tanin adalah 100:1 dengan penurunan konsentrasi antosianin sebesar 0,07mM/hari atau 7,86mg/100g/hari, laju penurunan retensi warna sebesar 2,39%/hari, dan waktu paruh 19,80.

Kata Kunci: Kopigmentasi, katekol, tanin, antosianin, bekatul beras ketan hitam