

**PENGARUH VARIASI CAMPURAN EKSTRAK SERAI (*Cymbopogon citratus*), ROSELLA (*Hibiscus sabdariffa*), DAN JAHE MERAH (*Zingiber officinale* var. *rubrum*) TERHADAP SIFAT FISIK, SIFAT ORGANOLEPTIK, DAN AKTIVITAS ANTIOKSIDAN PADA GULA MERAH KELAPA SELARAH**

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**ABSTRAK**

**Latar Belakang.** Gula merah kelapa merupakan pemanis tradisional dengan potensi untuk ditingkatkan nilai fungsionalnya. Inovasi diperlukan untuk memperkaya profil sensori dan kandungan antioksidannya.

**Tujuan.** Penelitian ini bertujuan untuk menganalisis pengaruh variasi campuran ekstrak serai, rosella, dan jahe merah terhadap sifat fisik, organoleptik, dan aktivitas antioksidan pada gula merah kelapa selarah.

**Metode.** Penelitian menggunakan rancangan eksperimen murni dengan Rancangan Acak Sederhana (RAS). Empat formulasi diuji: P0 (kontrol, 100% nira), P1 (86,7%:0,8%:1,5%:11%), P2 (83,7%:1,8%:2,5%:12%), dan P3 (80,7%:2,8%:3,5%:13%) secara berturut-turut untuk nira kelapa, ekstrak serai, rosella, dan jahe merah. Sifat fisik diobservasi, sifat organoleptik diuji dengan hedonic test oleh 25 panelis agak terlatih, dan aktivitas antioksidan dianalisis dengan metode DPPH. Data dianalisis menggunakan uji Kruskal-Wallis dan ANOVA dilanjutkan dengan uji Duncan yang digunakan untuk melihat tingkat kesukaan konsumen dan aktifitas antioksidan pada produk.

**Hasil dan Pembahasan.** Peningkatan variasi ekstrak serai, rosella, dan jahe merah menghasilkan coklat tua dan tekstur semakin keras. Pada aroma dan rasa tetap menghasilkan rasa khas gula merah. Uji organoleptik menunjukkan perbedaan nyata hanya pada parameter warna ( $p=0,037$ ) dengan P3 sebagai perlakuan terbaik berdasarkan diagram spider web. Uji aktivitas antioksidan dengan nilai  $IC_{50}$  seluruh perlakuan masih tergolong sangat lemah ( $>200$  ppm).

**Kesimpulan.** Variasi campuran ekstrak serai, rosella, dan jahe merah berpengaruh nyata terhadap sifat fisik dan organoleptik. Gula merah kelapa selarah, dengan P3 sebagai formulasi terbaik yang memiliki tingkat kesukaan tertinggi. Aktivitas antioksidan P3 nilai  $IC_{50}$  817,74 ppm yang tergolong sangat lemah.

**Kata kunci:** antioksidan, gula merah, jahe merah, rosella, sifat fisik, sifat organoleptik, serai.

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**THE EFFECT OF VARIATION IN THE MIXTURE OF LEMONGRASS  
(*Cymbopogon citratus*), ROSELLE (*Cymbopogon citratus*), AND RED  
GINGER (*Zingiber officinale* var. *rubrum*) EXTRACTS ON THE PHYSICAL  
PROPERTIES, ORGANOLEPTIC PROPERTIES, AND ANTIOXIDANT  
ACTIVITY OF SELARAH COCONUT PALM SUGAR**

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**ABSTRACT**

**Background.** Coconut palm sugar is a traditional sweetener with potential for functional value enhancement. Innovation is needed to enrich its sensory profile and antioxidant content.

**Objective.** This study aimed to analyze the effect of varying mixtures of lemongrass, roselle, and red ginger extracts on the physical properties, organoleptic characteristics, and antioxidant activity of selarah coconut palm sugar.

**Methods.** This study employed a true experimental design with a Simple Randomized Design (SRD). Four formulations were tested: P0 (control, 100% coconut sap), P1 (86.7%:0.8%:1.5%:11%), P2 (83.7%:1.8%:2.5%:12%), and P3 (80.7%:2.8%:3.5%:13%), corresponding respectively to coconut sap, lemongrass extract, roselle extract, and red ginger extract. Physical properties were observed, organoleptic properties were evaluated using a hedonic test involving 25 semi-trained panelists, and antioxidant activity was analyzed using the DPPH method. Data were analyzed using the Kruskal-Wallis test and ANOVA, followed by Duncan's test, to determine consumer preference levels and antioxidant activity of the products.

**Results and Discussion.** Increasing the proportion of lemongrass, roselle, and red ginger extracts resulted in a darker brown color and an increasingly harder texture. The aroma and taste consistently retained the characteristic flavor of coconut palm sugar. The organoleptic test revealed a significant difference only in the color parameter ( $p = 0.037$ ), with P3 identified as the best treatment based on the spider web diagram. The  $IC_{50}$  values obtained from the antioxidant activity test indicated that all treatments were classified as very weak ( $>200$  ppm).

**Conclusion.** Variations in the mixture of lemongrass, roselle, and red ginger extracts significantly affected the physical and organoleptic properties of selarah coconut palm sugar, with P3 identified as the best formulation with the highest preference level. The antioxidant activity of P3 had an  $IC_{50}$  value of 817.74 ppm, which is classified as very weak.

**Keywords:** antioxidant, coconut palm sugar, red ginger, roselle, physical properties, organoleptic properties, lemongrass.