

ANALISIS TOTAL FENOL, VITAMIN C, AKTIVITAS ANTIOKSIDAN PADA YOGHURT UMBI BIT (*Beta vulgaris L.*) DAN KAYU MANIS (*Cinnamomum burmannii*)

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INTISARI

Latar Belakang: Salah satu makanan yang dapat meningkatkan kesehatan adalah makanan fungsional. Yoghurt merupakan jenis makanan fungsional yang terbuat dari fermentasi susu menggunakan bakteri asam laktat *Lactobacillus bulgaricus* dan *Streptococcus thermophilus*. Umbi bit dan kayu manis mengandung zat-zat bioaktif yang bermanfaat bagi kesehatan diantaranya fenol, antioksidan dan vitamin. Umbi bit dan kayu manis dapat ditambahkan ke dalam yoghurt sehingga dapat memperkaya kandungan gizinya melalui proses fermentasi.

Tujuan: Mengetahui kadar total fenol, vitamin C, dan aktivitas antioksidan pada yoghurt umbi bit dan kayu manis dengan berbagai konsentrasi.

Metode: Penelitian eksperimental murni dengan Rancangan Acak Lengkap. Konsentrasi yoghurt yang diuji yaitu yoghurt tanpa penambahan umbi bit dan kayu manis, yoghurt dengan penambahan 5% umbi bit dan 0,5% kayu manis, yoghurt dengan penambahan 5% umbi bit dan 1% kayu manis, yoghurt dengan penambahan 10% umbi bit dan 0,5% kayu manis, dan yoghurt dengan penambahan 10% umbi bit dan 1% kayu manis. Analisis kadar fenol menggunakan metode Folin-Ciocalteu, analisis vitamin C menggunakan metode titrasi iodometri, dan analisis aktivitas antioksidan menggunakan metode DPPH. Uji total fenol menggunakan uji Kruskal Wallis, uji vitamin C dan aktivitas antioksidan menggunakan uji *One Way ANOVA*. Aktivitas antioksidan pada yoghurt dibandingkan dengan jus jeruk yang mengandung vitamin C menggunakan uji *Mann Whitney*.

Hasil Penelitian: Total fenol antar kelompok perlakuan tidak berbeda signifikan ($p > 0,05$) sementara kadar vitamin C dan aktivitas antioksidan antar kelompok perlakuan berbeda signifikan ($p < 0,05$). Aktivitas antioksidan antar kelompok perlakuan berbeda signifikan ($p < 0,05$) akan tetapi tidak berbeda signifikan apabila dibandingkan dengan aktivitas antioksidan jus jeruk yang mengandung vitamin C ($p > 0,05$).

Kesimpulan: Penambahan umbi bit dan kayu manis pada yoghurt meningkatkan kadar vitamin C dan aktivitas antioksidan tetapi tidak meningkatkan kadar total fenol. Aktivitas antioksidan yoghurt umbi bit dan kayu manis tidak berbeda dengan aktivitas antioksidan vitamin C dalam jus jeruk.

Kata Kunci: yoghurt, umbi bit, kayu manis, total fenol, vitamin C, aktivitas antioksidan

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ANALYSIS OF TOTAL PHENOL, VITAMIN C, AND ANTIOXIDANT ACTIVITY IN BEETROOT (*Beta vulgaris L.*) AND CINNAMON (*Cinnamomum burmannii*) YOGURT

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ABSTRACT

Background: One of the foods that can improve health is functional foods. Yogurt is a type of functional food made from fermented milk using lactic acid bacteria *Lactobacillus bulgaricus* and *Streptococcus thermophilus*. Beetroot and cinnamon contain bioactive substances that are beneficial for health, including phenol, antioxidants, and vitamins. Beetroot and cinnamon can be added to yogurt so they can enrich its nutritional content through the fermentation process.

Objectives: The purpose of this study was to determine total phenol, vitamin C, and antioxidants activity on beetroot and cinnamon yogurt with various concentrations.

Method: This study was an experimental study with completely random design. Yogurt's concentrations that being tested were yogurt without addition of beetroot and cinnamon, yogurt with the addition of 5% beetroot and 0,5% cinnamon, yogurt with the addition of 5% beetroot and 1% cinnamon, yogurt with the addition of 10% beetroot and 0,5% cinnamon, and yogurt with the addition of 10% beetroot and 1% cinnamon. Total phenol, vitamin C, and antioxidant activity was determined by Folin-Ciocalteu method, the iodine titration method, and DPPH method, respectively. Total phenol was analyzed with Kruskal Wallis test, vitamin C and antioxidant activity were analyzed with One Way ANOVA test. Beetroot and cinnamon yogurt's antioxidant was compared with orange juice's antioxidant that contains vitamin C. It was analyzed with Mann Whitney test.

Result: Total phenol between groups were not significantly different ($p>0,05$), while vitamin C between groups were significantly different ($p<0,05$). Antioxidant activity between groups were significantly different ($p<0,05$), but not significantly different if compared with orange juice's antioxidant that contains vitamin C ($p>0,05$).

Conclusion: Addition of beetroot and cinnamon on yogurt increase vitamin C content and antioxidant activity but do not increase total phenol content. There is no antioxidant activity differences between beetroot and cinnamon's yogurt and vitamin C in orange juice.

Keywords: yogurt, beetroot, cinnamon, total phenol, vitamin C, antioxidant activity

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