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PHYSICOCHEMICAL ANALYSIS AND ANTIOXIDANT BENEFITS OF YOGURT ENRICHED WITH BETALAINS FROM RED BEET (*BETA VULGARIS* L.)

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ABSTRACT

Food color is a key purchasing factor for consumers and a quality indicator. Recently, there has been a shift towards natural food colors, leading to increased use of red beet as a colorant. Beet betalains are valued in the food industry for their natural coloring, high water solubility, and non-toxic nature. This study aimed to compare two types of yogurt: one with natural beetroot juice colorant at concentrations of 6 g/L and 12 g/L (chosen based on preliminary tests), and a control yogurt with no colorant.

Yogurts were analyzed for physicochemical properties (pH, acidity, ash content, moisture content, syneresis), nutritional content (protein and sugar), phytochemical properties (phenolic and betalain content, antioxidant activity), and sensory attributes over 21 days of refrigerated storage at 4°C. Statistical analysis was performed using Tukey-Kramer HSD test (Minitab software) with a significance level of 0.05.

pH decreased while acidity increased in betalain-enriched yogurt during storage, yet pH remained between 4.5 and 4.8. Significant differences in ash and moisture content were noted. Phytochemical parameters and antioxidant potential improved with betalain enrichment at both 6 g/L and 12 g/L. Sensory evaluation after 21 days showed that yogurt with beetroot juice at 6 g/L and 12 g/L was preferred for its pink color and sweet taste.

The study highlights the benefits of adding beetroot betalain to yogurt. This plant provides valuable polyphenols and betalains, which are beneficial for health. Betalain-enriched yogurt can thus enhance health and offer protection against free radical damage