

ABSTRACT

Wizdan Abdillah. 24020121120010. Physicochemical Characteristics of Functional Kombucha Beverage from Roselle (*Hibiscus sabdariffa*) with Varying Palm Sugar Concentrations. Supervised by Endang Kusdiyantini and Arifa Rizqi Nafisa.

Kombucha is a fermented beverage containing bioactive compounds such as organic acids and antioxidants. The addition of roselle (*Hibiscus sabdariffa*) as a source of anthocyanins and flavonoids, along with the use of palm sugar as a local carbon source, is expected to enhance the functional quality of kombucha. This study aimed to determine the effects of varying palm sugar concentrations (10%, 20%, and 30%) and fermentation durations (0, 7, and 14 days) on the antioxidant activity, pH, alcohol content, acidity, and organoleptic properties of roselle kombucha. The method used was a 3×3 factorial Completely Randomized Design (CRD) with 27 treatment units. Physicochemical analyses included antioxidant activity using the DPPH method, pH measurement with a digital pH meter, alcohol content determined using the pycnometer method, and organoleptic testing by 25 panelists. The lowest pH value was observed on day 14 with 30% palm sugar, recorded at 2.58. The highest acidity was also found on day 14 at 30% concentration, reaching 1.28 g/100 mL. The highest alcohol content was 0.42% under the same treatment. The highest antioxidant activity (95.34%) was obtained on day 14 with 10% palm sugar at a sample concentration of 100 ppm. Organoleptically, day 14 with 10% sugar concentration received the highest average scores for aroma (4.28), taste (4.00), and color (4.48). Overall, the data indicate that variations in fermentation time and palm sugar concentration significantly affect the observed parameters of roselle kombucha.

Keywords: kombucha, antioxidant, pH, acidity, alcohol, organoleptic