

Shelf-Life Assessment of Different Flavoured Drinking Yoghurts using Physicochemical and Microbiological Parameters

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Fermented milk products are important due to their nutritional and functional properties. However, shelf-life assessment of these products is often performed using single parameters, which may reduce the reliability of prediction results. Therefore, this study aimed to assess the shelf life of different flavoured drinking yoghurts using physicochemical and microbial quality parameters. Samples of vanilla, strawberry, mango, and aloe vera flavoured drinking yoghurts were obtained from a commercial dairy processing unit in Sri Lanka and stored under similar refrigerated conditions (4°C) throughout the experimental period. Key physicochemical parameters, including pH, titratable acidity, water-holding capacity, and syneresis, as well as microbial parameters such as yeast and mold count, and coliform count, were evaluated weekly over a four-week storage period. The results revealed a significant ($P < 0.05$) decrease in pH (4.30-3.97) and an increase in titratable acidity (0.75-1.40%). Syneresis and water-holding capacity remained within acceptable limits, while yeast and mold counts were TFTC and coliforms were absent in all samples. Graphical trend analysis and regression modelling demonstrated progressive product deterioration during storage. The statistically significant regression model ($Y=a+b(\text{pH})+c(\text{TA})$) demonstrated a relationship between storage time, pH, and titratable acidity. Shelf life was estimated based on physicochemical limits (pH 4.0 and titratable acidity 1.2%) and trend extrapolation. The developed prediction models indicated shelf lives of 29, 26, 25, and 24 days for vanilla, mango, strawberry and aloe vera flavoured drinking yoghurts, respectively. These findings indicate that physicochemical and microbiological parameters combined with trend analysis provide a reliable approach for shelf-life estimation.

Keywords: Drinking yoghurt, Microbiology, Physicochemical parameters, Regression analysis, Shelf-life