



INFOGRAPHIC

NGHIÊN CỨU PHÁT TRIỂN NƯỚC ME (TAMARINDUS INDICA) LÊN MEN GIÀU VI KHUẨN LACTIPLANTIBACILLUS PLANTARUM

Tác giả:

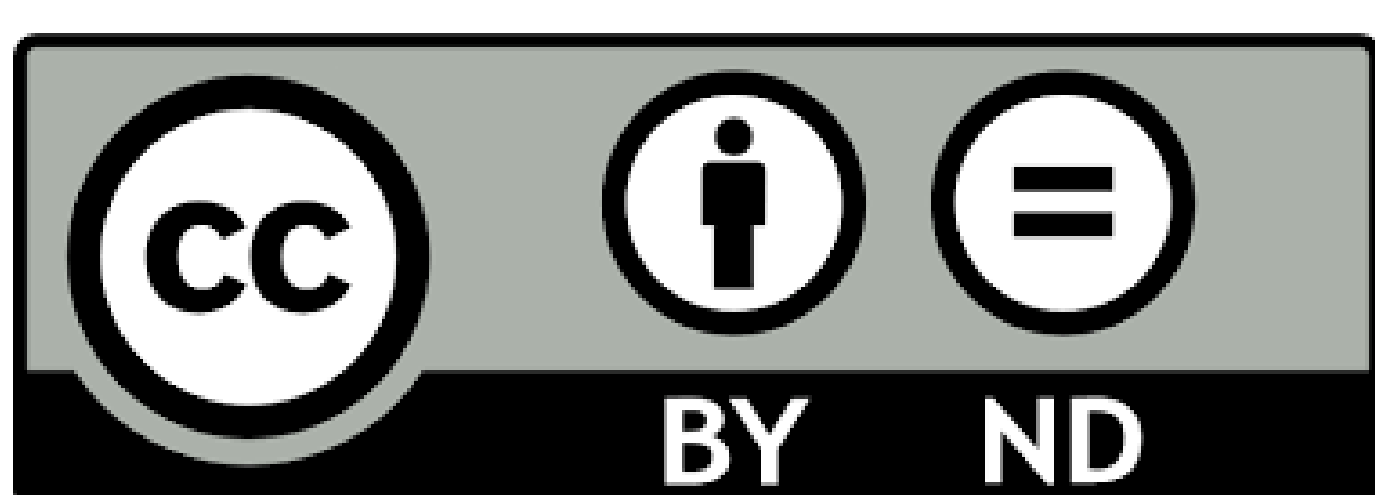
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Đơn vị:

Khoa Khoa học Ứng dụng & Công nghệ

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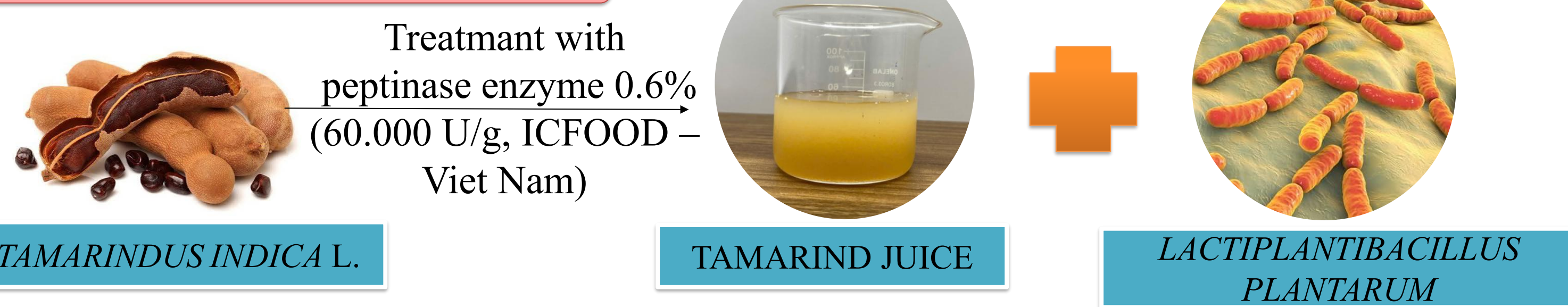


Nghiên cứu phát triển nước me (*Tamarindus indica*) lên men giàu vi khuẩn *Lactiplantibacillus plantarum* © 2026 bởi **Trần Vương Vân Anh** được cấp phép theo **CC BY-ND 4.0**.

RESEARCH ON THE DEVELOPMENT OF FERMENTED TAMARIND (*TAMARINDUS INDICA*) JUICE RICH IN *LACTIPLANTIBACILLUS PLANTARUM* BACTERIA.

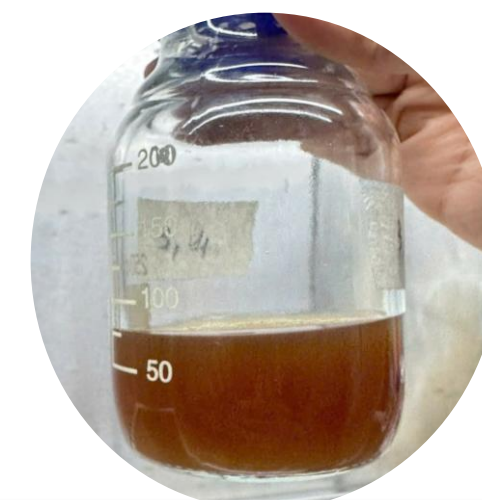
Abstract: This study was conducted to investigate changes in the physicochemical properties, biological activities, and bacterial counts of tamarind (*Tamarindus indica* L.) juice fermented with acid-tolerant *Lactiplantibacillus plantarum*, while also evaluating the maintenance of product quality and probiotic properties during storage. The tamarind juice was treated with pectinase enzyme (w/v), adjusted for °Brix, pasteurized, and inoculated with *L. plantarum* at 10% (v/v), followed by fermentation at 37°C for 5 days. The parameters evaluated during fermentation included pH, °Brix, total acidity, reducing sugars, bacterial counts, total phenolic content (TPC), and DPPH antioxidant activity. After fermentation, the product was stored for 4 weeks and evaluated for TPC, DPPH antioxidant activity, bacterial counts, auto-aggregation, and co-aggregation with *Escherichia coli*.

FERMENTATION PROCESS



MATERIALS AND METHODS

L. plantarum
inoculation:
10% (v/v)

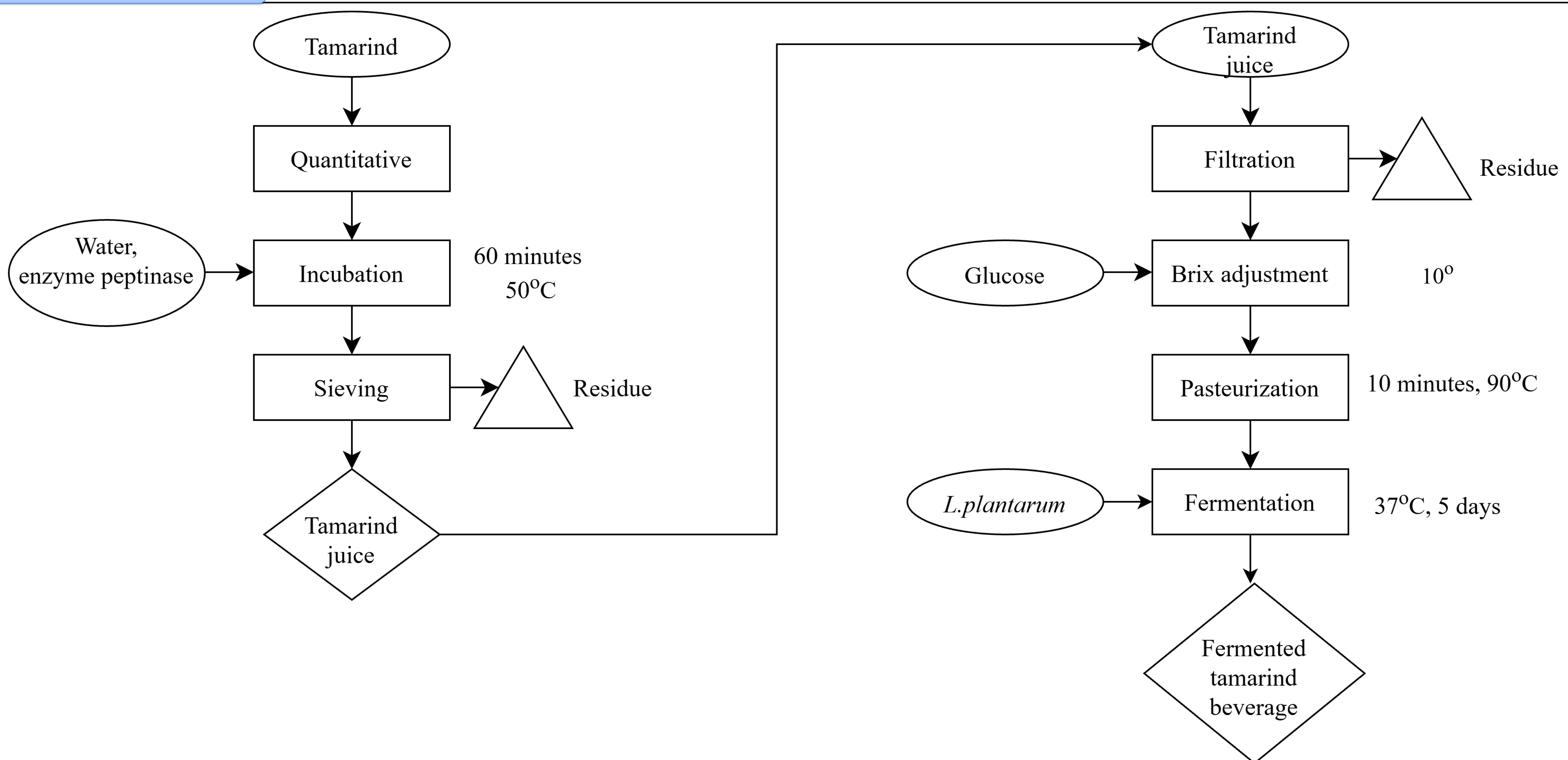


Storage for
0 – 4 weeks



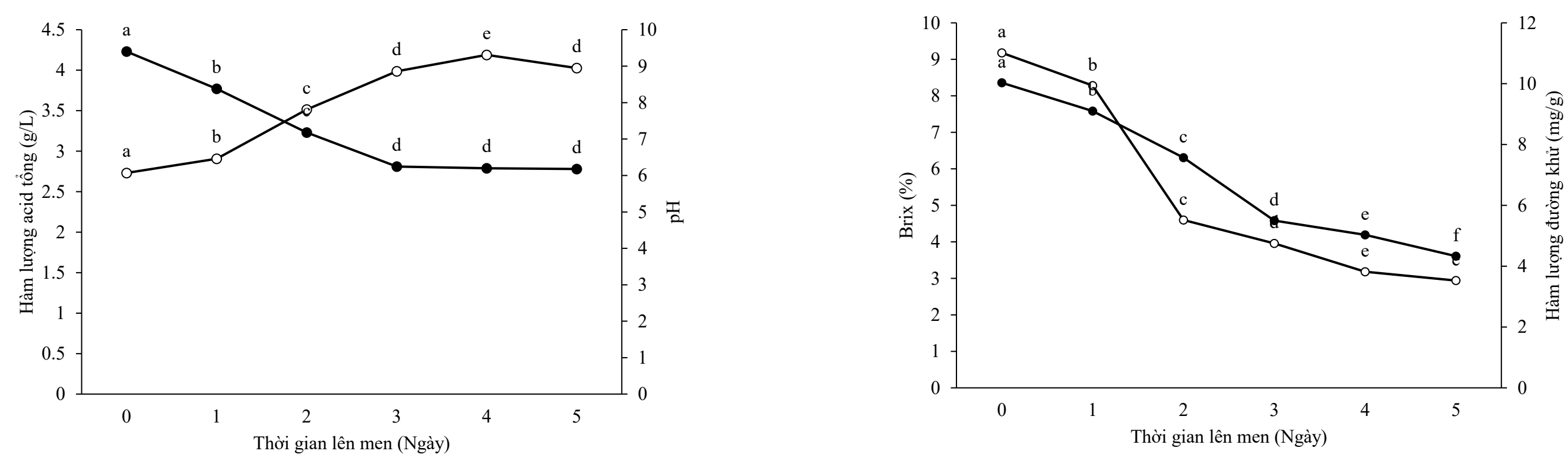
STORAGE PROCESS

TECHNOLOGICAL PROCESS

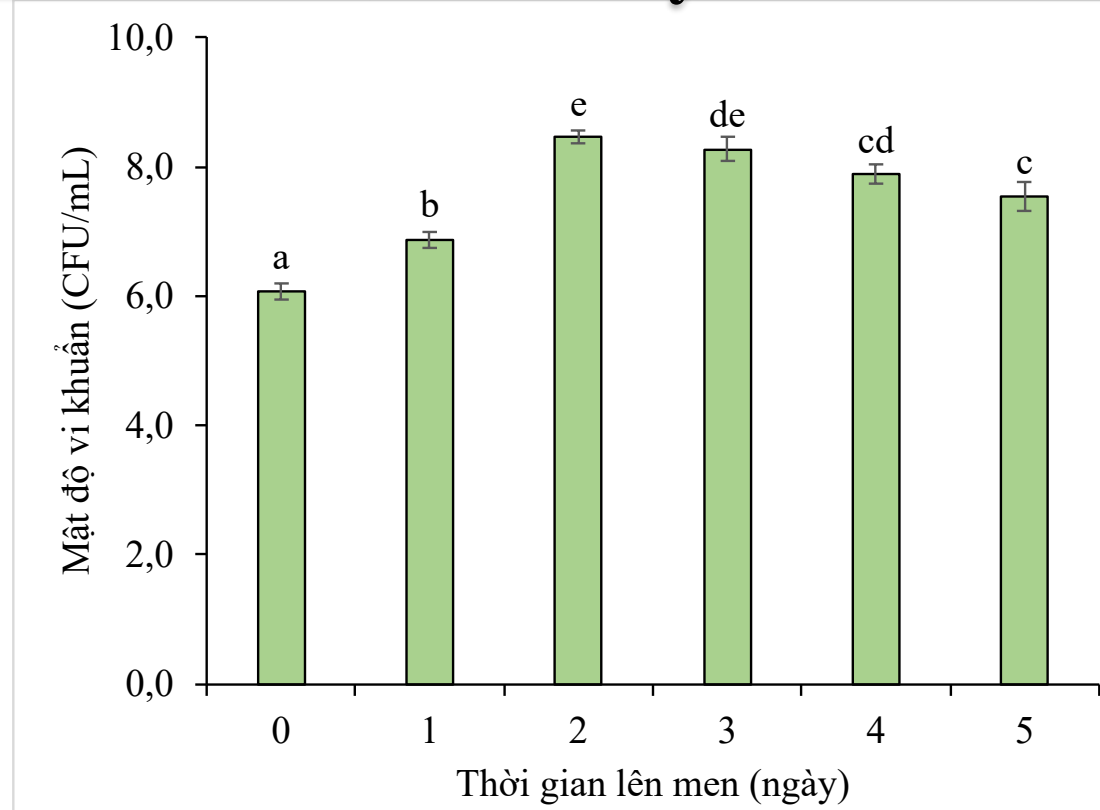


RESULT

EVALUATION OF PHYSICOCHEMICAL PROPERTIES, TPC, DPPH, AND BACTERIAL CELL DENSITY AFTER FERMENTATION

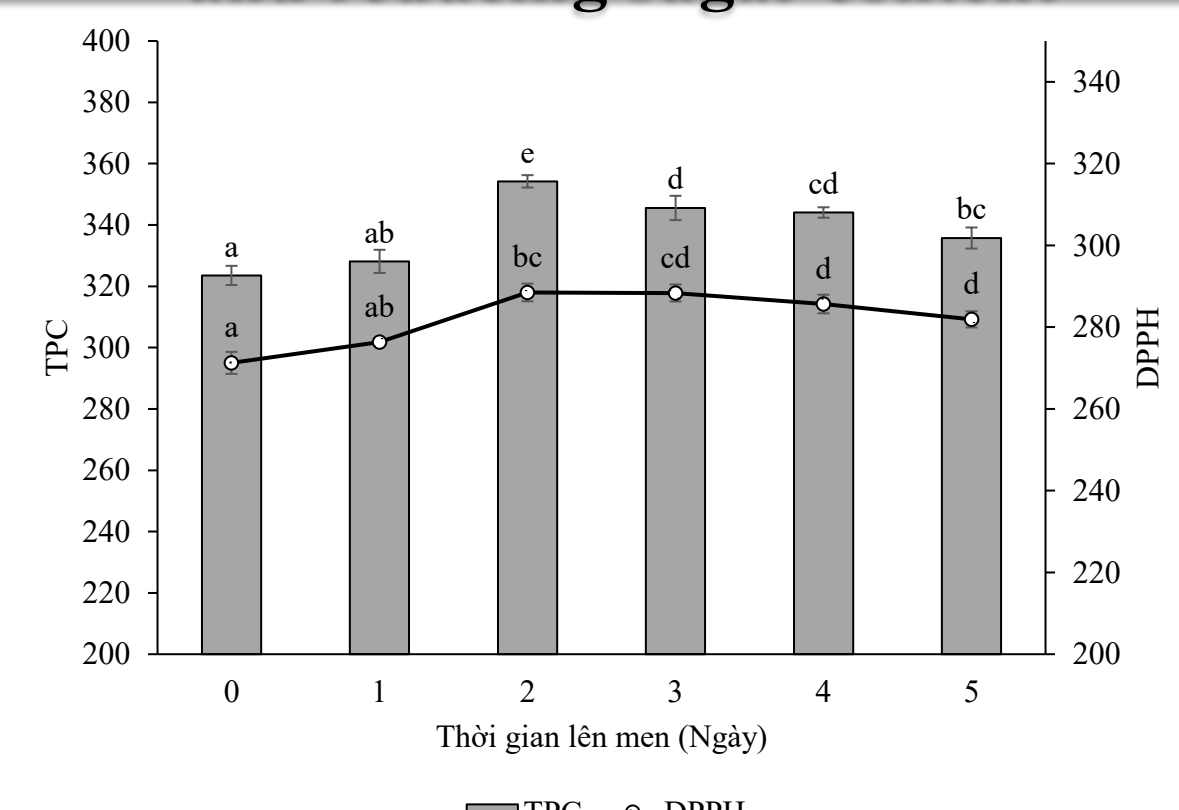


Effect of fermentation time on pH and total acidity



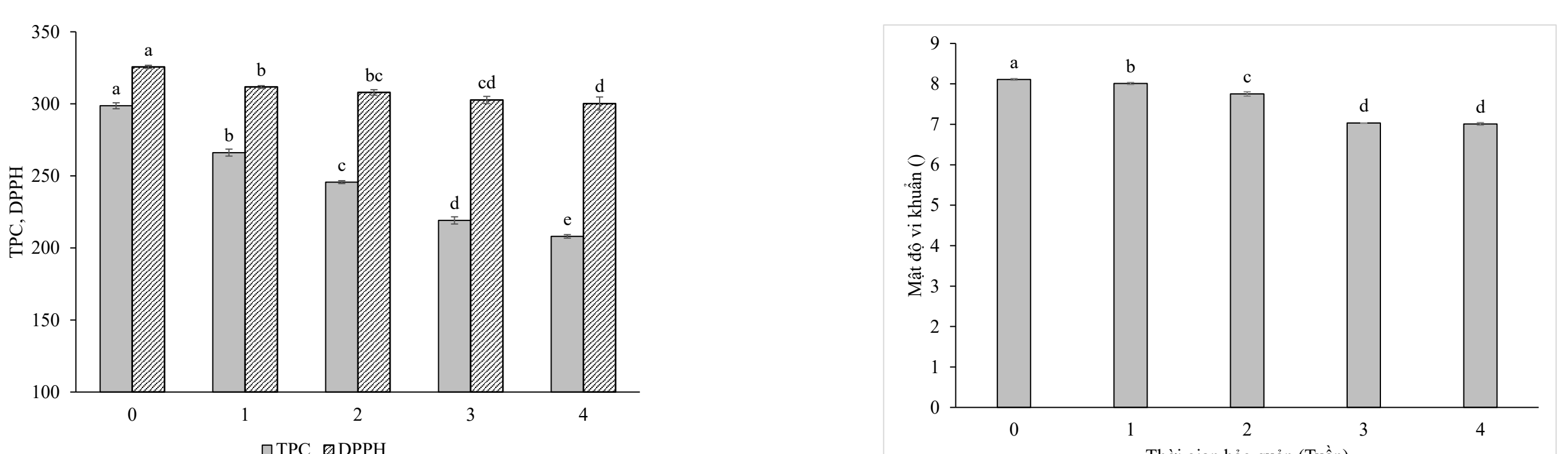
Effect of fermentation time on *Lactiplantibacillus plantarum* cell density

Effect of fermentation time on °Brix and reducing sugar content

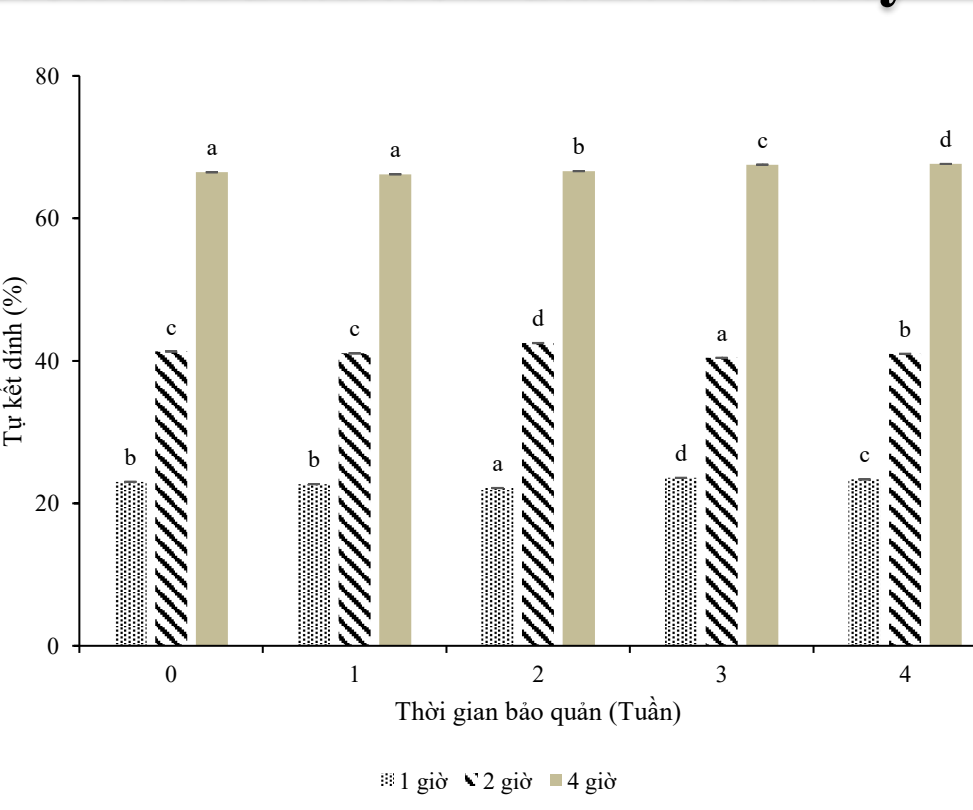


Effect of fermentation time on total phenolic content and antioxidant activity

EVALUATION OF FERMENTED TAMARIND BEVERAGE QUALITY DURING STORAGE

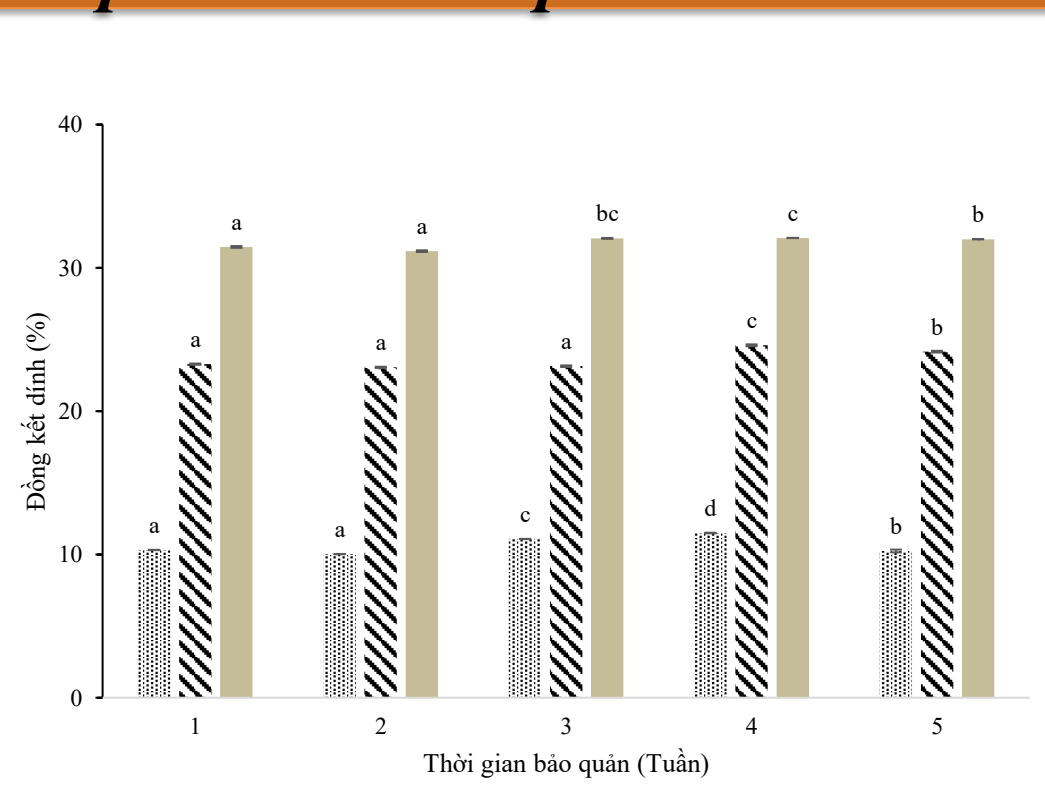


Effect of storage time on total phenolic content and antioxidant activity



Effect of storage time on auto-aggregation ability

Effect of storage time on *Lactiplantibacillus plantarum* cell density



Effect of storage time on co-aggregation ability

Conclusion: Acid-tolerant *Lactiplantibacillus plantarum* was used to ferment tamarind juice to evaluate changes in physicochemical properties, biological activity, bacterial viability, and selected probiotic properties during fermentation and storage. The results showed that *L. plantarum* was able to adapt and grow well in the tamarind juice environment. During fermentation, pH, °Brix, and reducing sugar content decreased, whereas total acidity increased. In contrast, the viable count of *L. plantarum* increased from 6.08 log CFU/mL and reached its highest level of 8.45 log CFU/mL on day 2. At the same time, total phenolic content (TPC) and DPPH antioxidant activity also reached their highest levels at this time point, at 315.67 mg GAE/L and 317.98, respectively.

During storage, although the bacterial count and bioactive compounds tended to decrease, *L. plantarum* maintained a relatively high viable cell count of 7.01 log CFU/mL. The strain also retained its auto-aggregation ability, ranging from 22.14% to 67.64%, as well as its co-aggregation ability with *Escherichia coli*, ranging from 10.02% to 32.00%. Overall, the results demonstrate that acid-tolerant *L. plantarum* has potential for application in tamarind juice fermentation, contributing to the development of plant-based fermented beverages containing probiotic bacteria.