

**PROBIOTIC BEVERAGE FROM FLUTED
PUMPKIN LEAF JUICE FERMENTED WITH
Pediococcus pentosaceus IO1**

By

ADESINA, I. A. AND OLUWAFEMI, Y. D.



***Department of Biological Sciences,
University of Medical Sciences, Ondo, Ondo State***

Presented at the Young Microbiologists' Conference

OUTLINE OF THE PRESENTATION

- **Introduction**
- **Objective**
- **Materials and Methods**
- **Results and Discussion**
- **Conclusion**
- **References**



INTRODUCTION


- **Probiotics are live microorganisms which, when administered in adequate amounts, confer a health benefit on the host (FAO/WHO, 2002).**
 - **Lactic acid bacteria (LAB)**
 - **constitute a broad heterogeneous group of generally food-grade microorganisms (Mozzi, 2016).**
 - **The need for alternative food matrices to dairy products...**
 - **Fluted pumpkin (*Telfairia occidentalis*)**
 - **dark green leafy vegetable**
 - **nutritious and are rich in vitamins and minerals**
- 



Plate 1: Fresh pumpkin leaves




OBJECTIVE OF THE STUDY


- To determine the suitability of fluted pumpkin leaf juice as a raw material for the production of probiotic beverage with *Pediococcus pentosaceus* IO1.



MATERIALS AND METHODS

- **Preparation of pumpkin leaf juice**
 - Extraction of juice
 - Pasteurization of juice at 80°C for 5 min
 - **Bacterial strain and growth condition**
 - A lactic acid bacterial strain, *Pediococcus pentosaceus* IO1, was used for this study.
 - **Fermentation of pumpkin leaf juice**
 - Probiotic pumpkin leaf juice preparation was done by fermentation with *P. pentosaceus* IO1 according to the methodology described by Yoon *et al.* (2006).
 - **Chemical analyses**
 - pH
 - Sugar content
 - Vitamin C assay
- 

MATERIALS AND METHODS CONT.

- **Mineral analysis**
 - Calcium, magnesium, and iron were determined using atomic-absorption spectrophotometer (AOAC, 2005)
 - Sodium and potassium were determined using the flame photometric method (AOAC, 2005)
 - **Microbiological analysis**
 - Viable cell counts on MRS agar plate using standard method
 - **Statistical analysis**
 - SPSS software package was used to analyze the experimental data
- 

RESULTS AND DISCUSSION

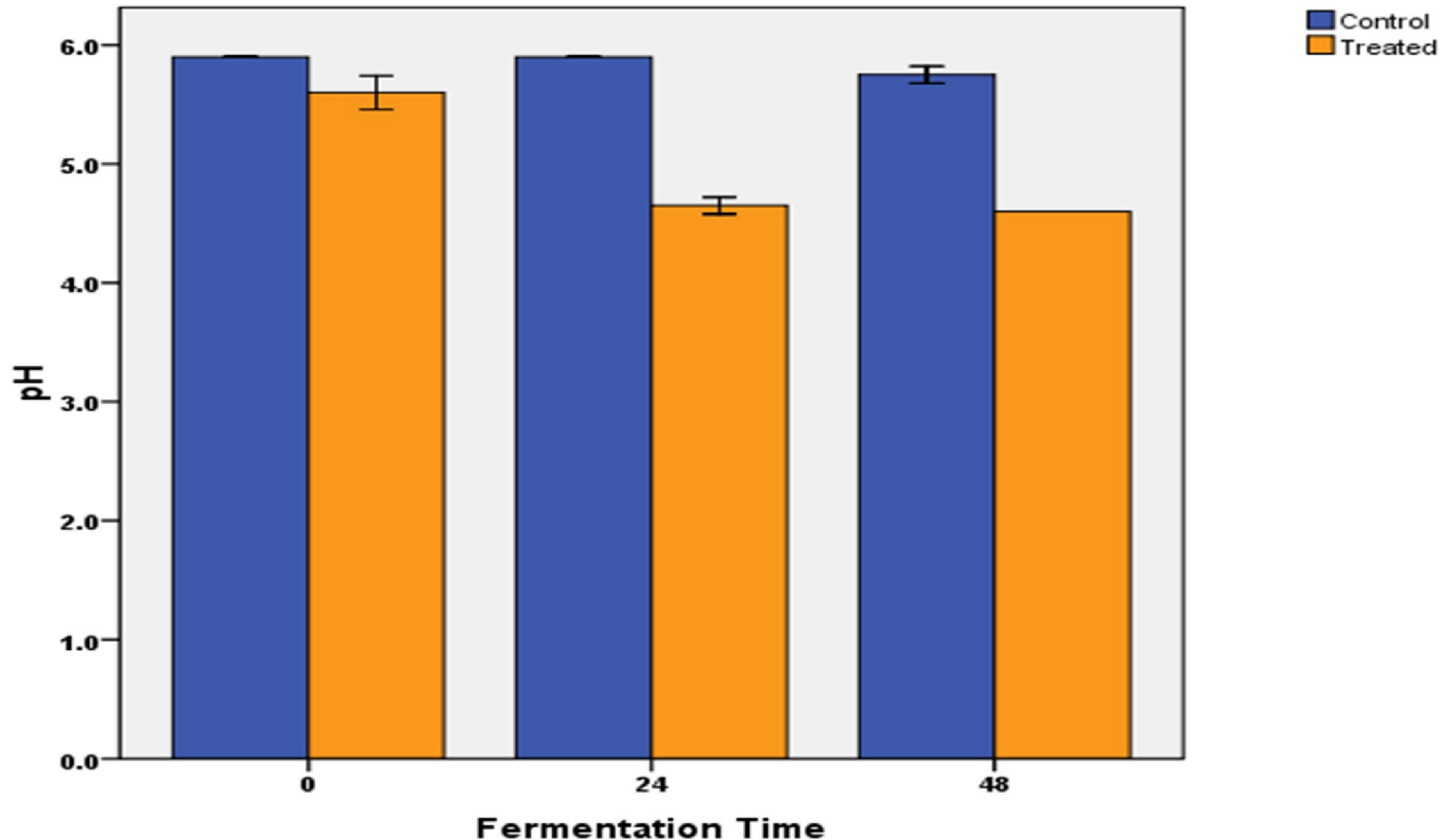


Fig. 1: pH value of pumpkin leaf juice (control) and juice treated with *P. pentosaceus* IO1 during fermentation



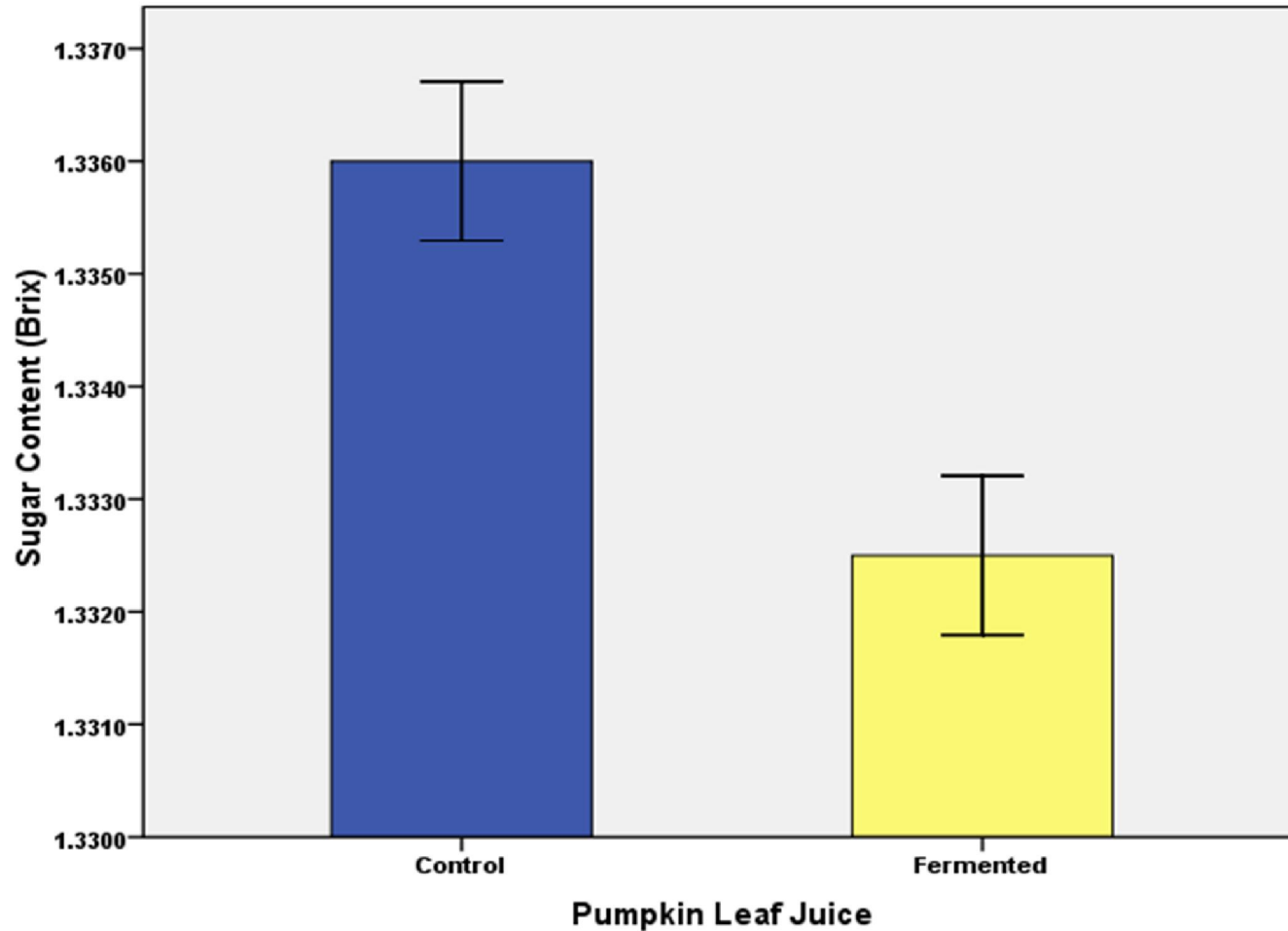


Fig. 2: Sugar content in pumpkin leaf juice after 48 h of fermentation



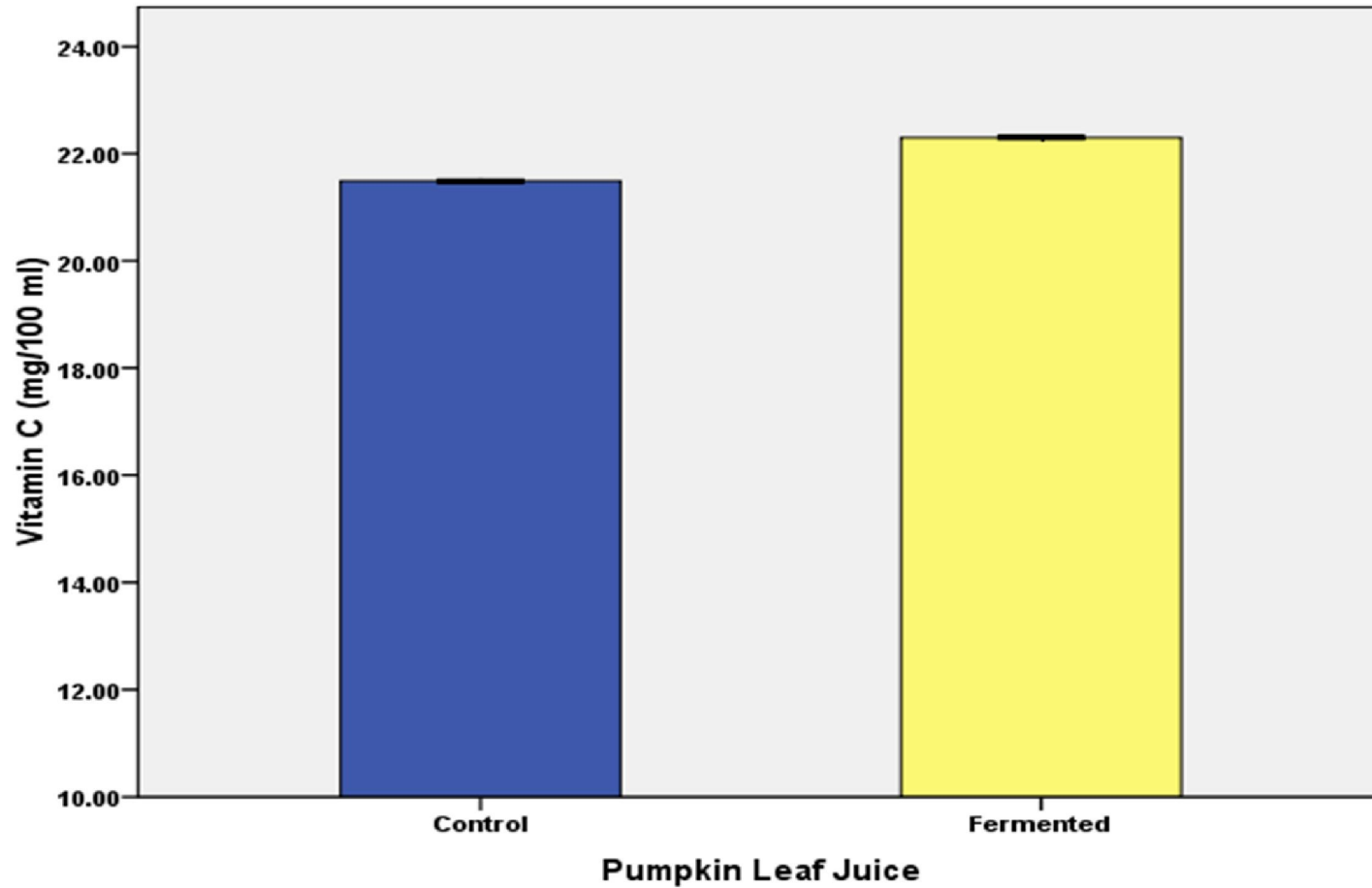


Fig. 3: Vitamin C content in pumpkin leaf juice after 48 h of fermentation



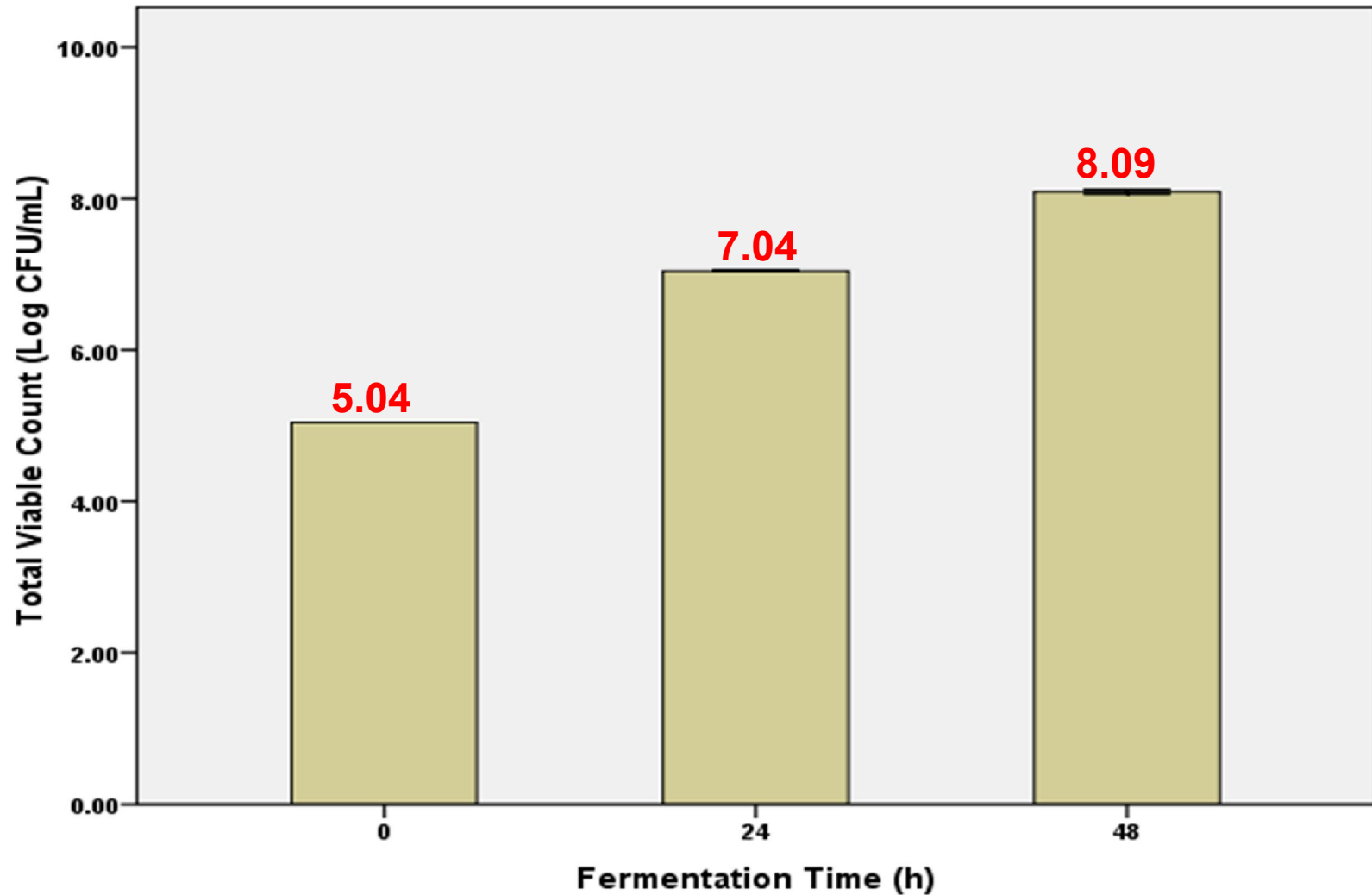
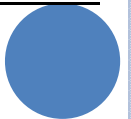


Fig. 4: Viable cell count of *P. pentosaceus* IO1 in inoculated pumpkin leaf juice during fermentation

Table 1: Mineral contents (mg/100 ml) in pumpkin leaf juice after 48 h of fermentation

Mineral contents	Control	Fermented Juice
Calcium (Ca)	58.00^a±1.41	63.00^a±1.40
Magnesium (Mg)	87.00^b±0.10	94.00^a±0.10
Potassium (K)	406.00^a±2.83	396.00^b±1.41
Sodium (Na)	18.00^a±1.41	16.00^a±2.00
Iron (Fe)	1.00^a±0.02	1.40^a±0.01



CONCLUSION

- **Pumpkin leaf juice has the potential to be used for the production of functional food beverage.**
- **Fermented pumpkin leaf juice could serve as a healthy beverage for vegetarians and lactose-allergic consumers.**



REFERENCES

- AOAC (2005). *Official Methods of Analysis*. Association of Official Analytical Chemists. 25th ed. Arlington, VA.**
- FAO/WHO (2002). Guidelines for the evaluation of probiotics in food. In Food and Agriculture Organization of United Nations and World Health Organization. Working Group Report, London, Ontario. pp. 1 – 34.**
- Mozzi, F. (2016). Lactic Acid Bacteria. *Encyclopedia of Food and Health*. pp. 501 – 508.**
- Yoon, K. Y., Woodams, E. E. and Hang, Y. D. (2006). Production of probiotic cabbage juice by lactic acid bacteria. *Bioresource Technology* 97: 1427 – 1430.**



THANK YOU

