



Industrialization of Fermented Food Processes in Nigeria: Prospects and Constraints (Review)

**A presentation at the KU8 Consortium International Conference 2023
held at the University of Ilorin, Ilorin, Nigeria.**

by

Adesulu-Dahunsi Adekemi Titilayo

**Department of Biological Sciences, Faculty of Computing and Applied Sciences,
Thomas Adewumi University, Oko, Kwara State, Nigeria.**

August, 2023

Fermentation in Food Processing...

- Fermentation typically is the conversion of carbohydrates to alcohols and carbon dioxide or organic acids using bacteria, yeasts or a combination thereof under anaerobic conditions
- Biotechnological process; transforming raw food matrices into complex foods
- Fermentation in simple term is the conversion of sugar into ethanol
- Oldest method of food preservation
- Food for future use, digestible, flavorful, nutritious



FERMENTED FOOD PRODUCTS..



Fig 1: Images of fermented foods of Nigeria

Research Questions?

- Scientific/technological improvements made so far on indigenous fermented foods in Nigeria.
- How did the improvements contribute to the qualities of the fermented foods?
- What are the advances introduced in the process / production of the indigenous fermented foods?
- Did the improvement have any impact in the substance of food and beverage industries?
- What are the problems associated with the improvements on the traditional methods?
- What are the constraints of the indigenous fermented foods?



Functions of Traditional Fermentation of Foods

- Enhancement of diet and food quality
- Decreased cooking time and fuel consumption
- Flavour development
- Texture in food development
- Preservation and shelf life extension
- Improved digestibility
- Nutrient availability
- Detoxification of anti-nutrient.



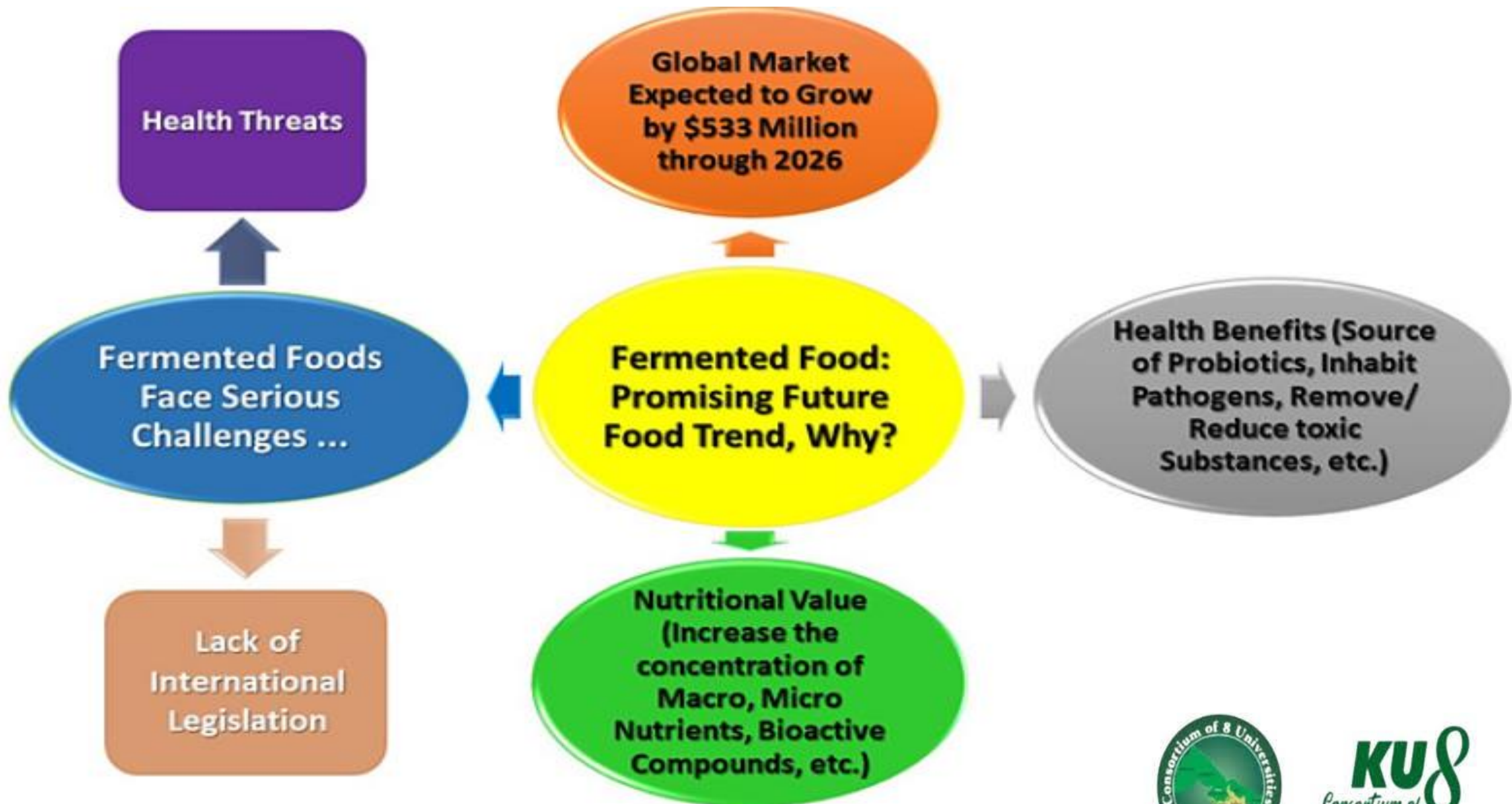


Fig 2: Schematic representation, why fermented foods are promising future food trends?



Factors Hampering the Development of Fermented Foods

- Crude handling and processing techniques
- Inadequate raw material grading and cleaning contributing to the presence of foreign matter (such as insects, stones) in final product.
- Lack of durability
- Lack of homogeneity
- Unattractive presentation.



With the contribution of researchers and food scientists towards the development and advancement of food technology, these challenges can be adequately addressed through industrialization;

- Starter cultures development
- Controlled fermentations
- Production of food processing enzymes.





Conclusion and Recommendation

In order to upgrade indigenous fermented food production, there should be upgrade from craft to a technology based production system.

- The use of starter cultures for production
- There should be stabilization of spontaneous fermentation
- There should be production of food processing enzymes
- Raw material development
- Genetic engineering
- Process development
- Finished product development.



Selected References

- Adesulu-Dahunsi A.T., Dahunsi S.O., Ajayeoba T.A. (2022). Co-occurrence of *Lactobacillus* species during fermentation of African indigenous foods: Impact on food safety and shelf-life extension. *Frontiers in Microbiology*. 13:684730. doi:10.3389/fmicb.2022.684730.
- Campsi V. (2022). What are the growth prospects for fermented foods? The Food Institute. <https://foodinstitute.com/focus/what-are-the-growth-prospects-for-fermented-foods/>
- El Sheikha A.F. (2018) Revolution in Fermented Food From Artisan Household Technology to Era of Biotechnology. In *Molecular Techniques in Food Biology: Safety, Biotechnology, Authenticity & Traceability*. (Eds. A.F. El Sheikha, R.E. Levin, and J. Xu), John Wiley & Sons Ltd., Chichester, UK, pp. 241-260.



Acknowledgments

- Thomas Adewumi University Management is graciously acknowledged for the conference sponsorship.



KU8
Consortium of
Universities in Kwara

THANK YOU



KU8
Consortium of
Universities in Kwara