Development of a Novel Food Product by Fermentation of Faba Bean Flour

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1. Introduction

Faba Bean (*Vicia faba* L.; FB) is a leguminous crop abundant in essential nutrients, offering potential health-promoting properties. Despite these health benefits, the consumption of FB is sparse due to the presence of certain antinutritional factors (ANFs; such as vicine and convicine and galacto-oligosaccharides).

LAB Fermentation → Product development using microwave steaming → Sugars and acids analysis

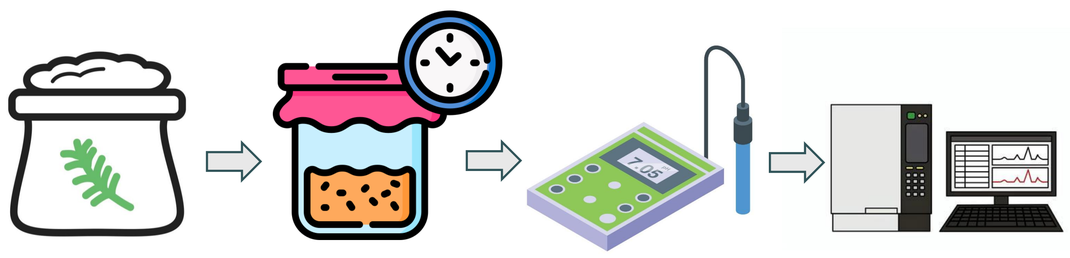
2. Materials and Methods

❑ Cultures

Type	Percentage	
Control	100% water	
Lactiplantibacillus plantarum	1%	
Curd (mixed cultures)	15% curd	30% curd
Yoghurt (*L. acidophilus-Bifidobacterium* sp.)	25% yoghurt	50% yoghurt

❑ Method

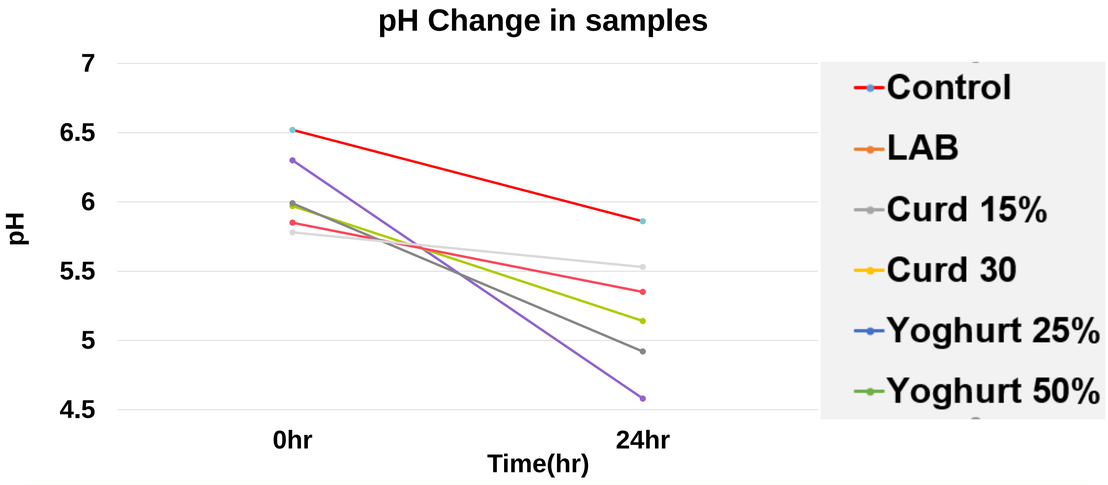
❖ **Fermentation of Faba Bean flour**



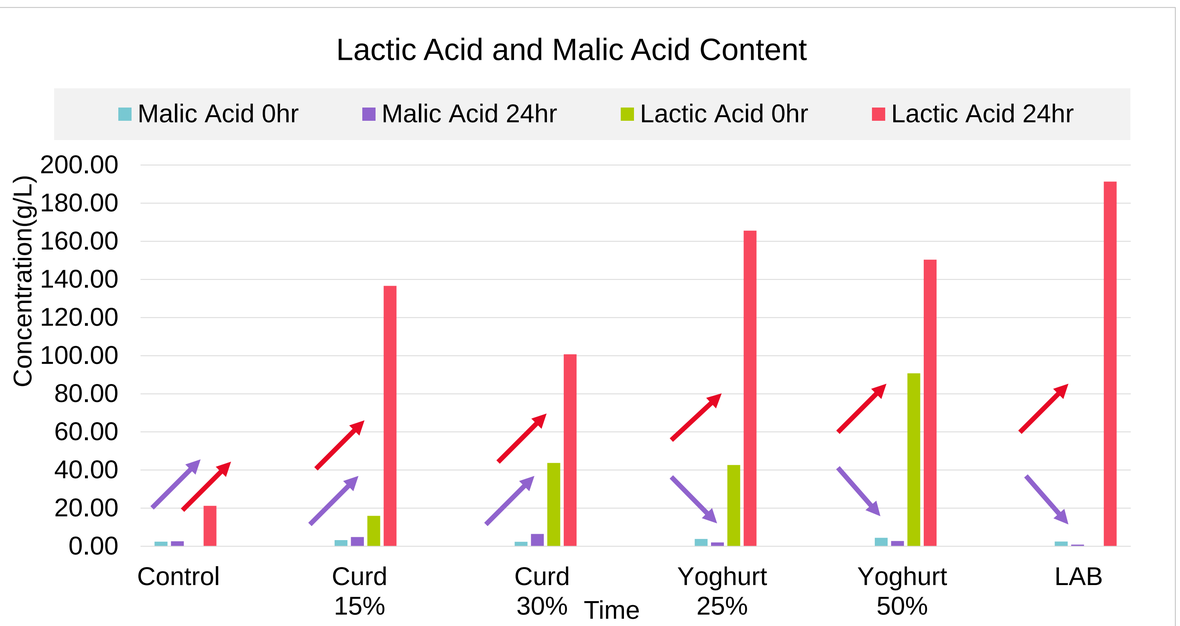
FB flour → Fermentation at 30°C for 24 hours → pH → GC-FID Analysis

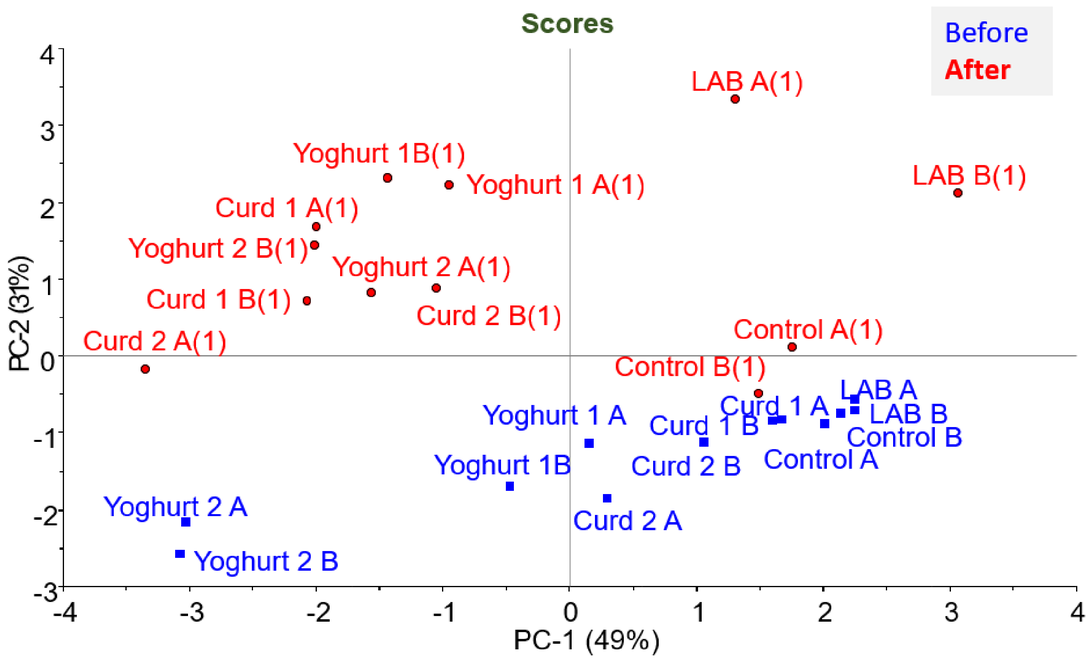
❖ **Preparation of product by microwaving the fermented batters (500W, 8min)**

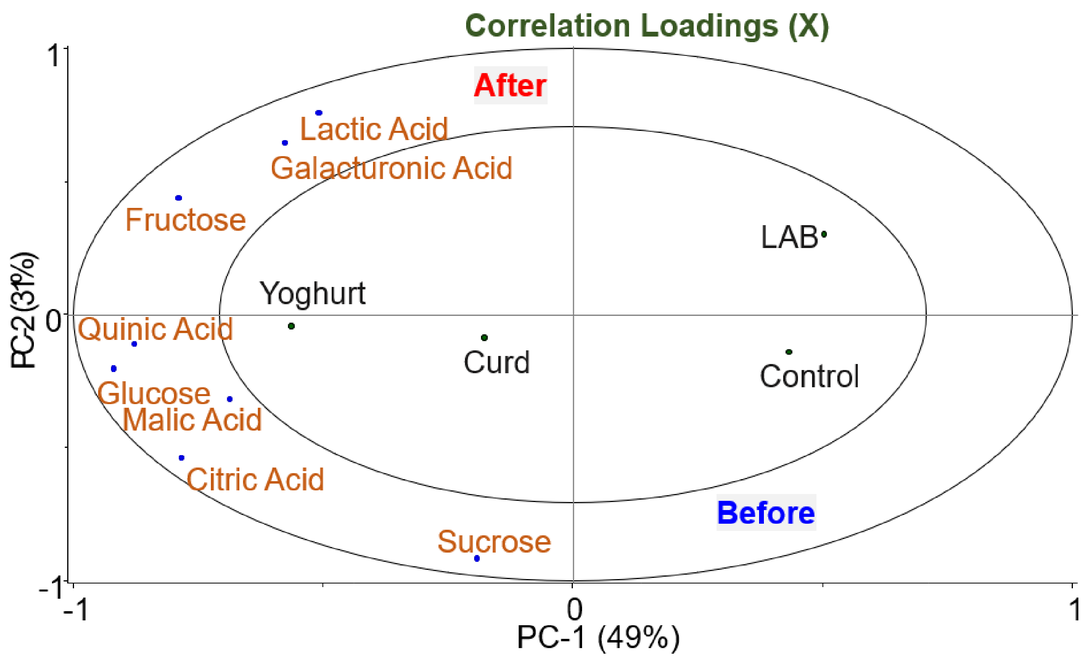
3. Results & Discussion



There were significant differences in lactic acid, fructose, and sucrose before and after fermentation in every combination (t-test, $p<0.05$). The presence of lactic acid may help mitigate the sour flavor associated with malic acid, making fermented products more palatable.







Lactic Acid, Galacturonic Acid, fructose, and Sucrose fermentation have more variance before and after in the PCA.

4. Conclusion

Faba Bean flour fermented with ***L. plantarum*** and **25% yoghurt** exhibited high levels of lactic acid content and lower levels of malic acid, potentially enhancing consumer acceptance. **Developed products bear semblance to dark bread and could act as a quick alternative to oven-baked breads.** Further research on ANF content and sensory evaluations are required to optimize their flavor profile.

Reference

Dhull, S. B., Kidwai, Mohd. K., Noor, R., Chawla, P., & Rose, P. K. (2021). A review of nutritional profile and processing of faba bean (*Vicia faba* L.). Legume Science. https://doi.org/10.1002/leg3.129