

## ABSTRACT

Water kefir is a probiotic beverage with a sour, fizzy taste and a small amount of alcohol, valued for its role in gut health, immunity, and disease prevention. It is a dairy-free option suitable for vegetarians, made from a sugar solution and water kefir grains containing lactic acid bacteria, acetic acid bacteria, and yeast. This study investigated the production of water kefir with dried longan and analyzed its properties. The process began with a 10% (w/v) coconut sugar solution, to which 10% (w/v) water kefir grains were added. Fermentation occurred at room temperature for three days, and dried longan was introduced on day 4 to enhance flavor and benefits due to its phenolic compounds with antioxidant activity. Total sugar analysis (Phenol-sulfuric method) showed an initial concentration of 84.829 mg/ml, a slight decrease by day 3, a peak at 116.109 mg/ml on day 6 (due to sugar release from dried longan), and a decline to 41.913 mg/ml by day 12. Reducing sugar analysis (DNS method) indicated an initial 3.312 mg/ml, peaking at 19.793 mg/ml on day 6 after longan addition, decreasing on day 9, and rising again on day 12. Gas chromatography confirmed an alcohol content below 3% (v/v). Phenolic content analysis (Folin-Ciocalteu method) revealed an initial 0.713 g/g GAE, a slight increase by day 3, and a rapid rise to 9.825 g/g GAE by day 6 after dried longan addition, continuing to increase until day 12. This suggests that dried longan enhances both the taste and nutritional value of water kefir.

## INTRODUCTION

Water kefir is a naturally fermented, probiotic-rich beverage known for its gut health benefits and immune-boosting properties. It is produced by fermenting a sugar solution with water kefir grains, resulting in a fizzy drink rich in beneficial bacteria. Longan, a major agricultural product in Northern Thailand, is primarily processed into dried form for export and is valued for its phenolic content, including gallic acid, ellagic acid, and corilagin, which having antioxidant properties. This study focuses on the fermentation of water kefir supplemented with dried longan, examining changes in sugar content, alcohol levels, and phenolic compounds over 12 days. The findings may support the development of a functional probiotic beverage while promoting the use of locally sourced ingredients.

## OBJECTIVES

- To study the fermentation process of kefir supplemented with dried longan
- To study the chemical properties of kefir supplemented with dried longan

## METHODOLOGY

### Ingredients



• Soak in coconut sugar solution for 72 hr. at room temperature



### Fermentation

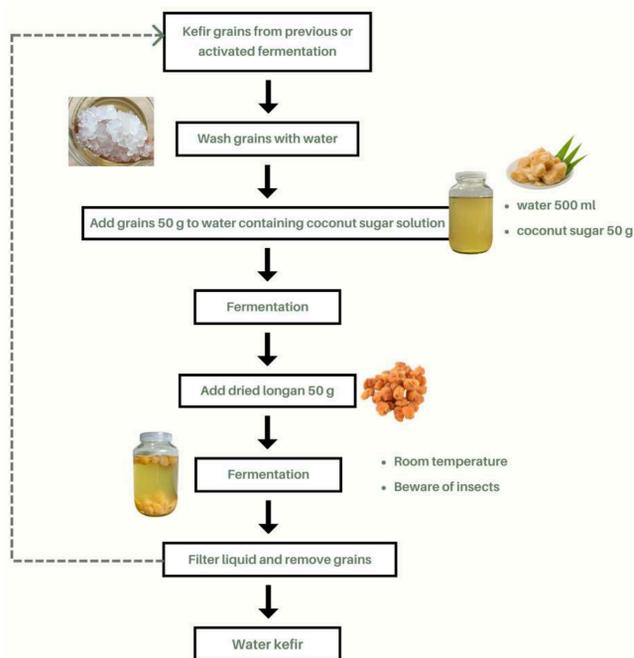
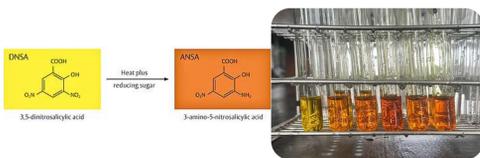


Fig. 1 Water kefir fermentation process diagram

## Properties analysis

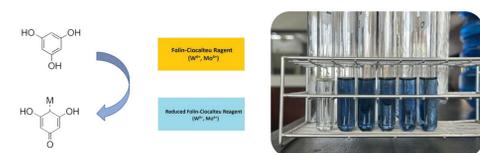
### The amount of reducing sugar by DNS method



### The amount of total sugar by phenol-sulfuric acid method



### The amount of total phenolic compounds by folin-ciocalteu method



### The amount of ethanol content by gas chromatography



## RESULTS

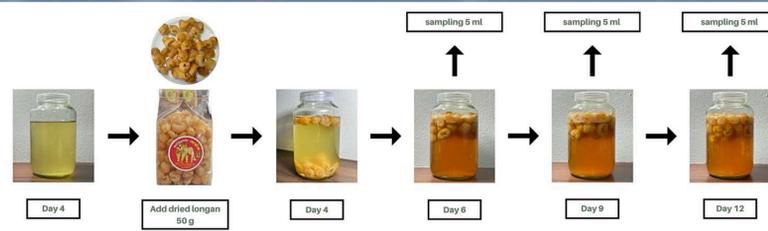
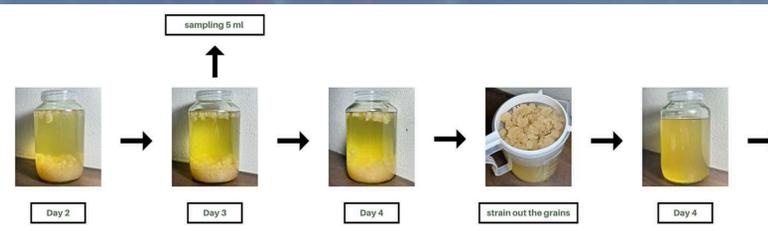
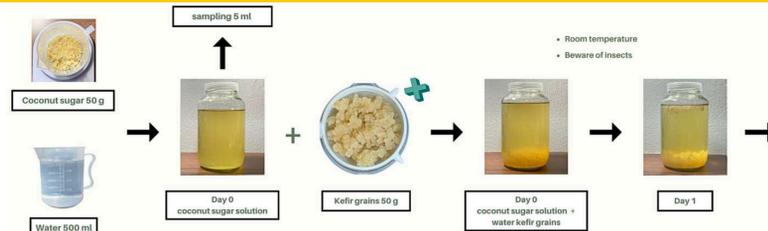


Fig. 2 Water kefir fermentation process with dried longan for 12 days

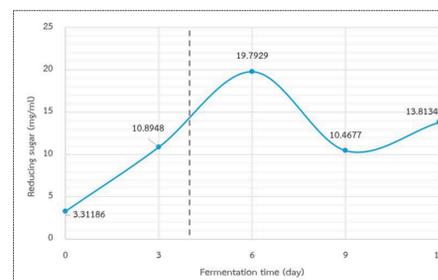


Fig. 3 The amount of reducing sugar in kefir fermentation.

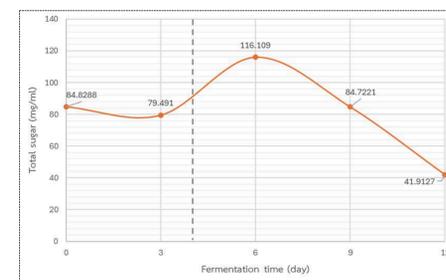


Fig. 4 The amount of total sugar in kefir fermentation.

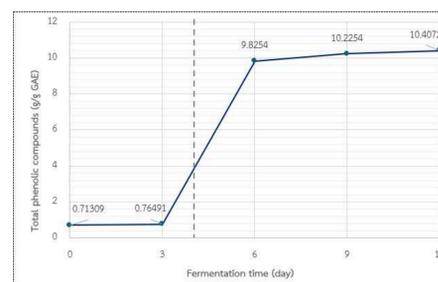


Fig. 5 The amount of total phenolic compounds in kefir fermentation.

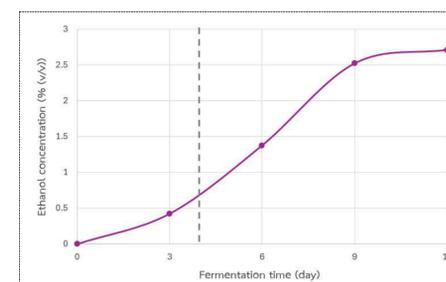


Fig. 6 The amount of ethanol content in kefir fermentation.

## CONCLUSIONS

- The amount of reducing sugar by DNS method** showed an increase in the early fermentation period (days 0-6), starting at 3.312 mg/ml on day 0 and increasing continuously to a maximum of 19.793 mg/ml on day 6 after adding dried longan, then decreasing on day 9 and increasing on day 12.
- The amount of total sugar by phenol-sulfuric acid method** showed a slight decrease in the early fermentation period before increasing to a maximum of 116.109 mg/ml on day 6 after adding dried longan on day 4 and continuously decreasing to 41.913 mg/ml on day 12.
- The amount of phenolic compounds by Folin-Ciocalteu Method** showed a slow increase in the amount of phenolic compounds. continuously during days 0-3 and increased rapidly on day 6 of fermentation, which is likely due to the addition of dried longan to increase the amount of phenolic compounds in the product.
- Alcohol quantification by gas chromatography** revealed a small amount of alcohol, less than 3% (v/v).

## ACKNOWLEDGEMENTS

- Assist. Prof. Dr. Jidapha Tinoi and seminar lecturers are Assist. Prof. Dr. Worraanong Leewattanapasuk and Dr. Pattanapong Thangsunan
- Central laboratory officer: Miss Yaravee Najaras and Mister Pornchai Chanta
- Division of Biochemistry and Biochemical Innovation, Department of Chemistry, Faculty of Science, Chiang Mai University.

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