

CELL VIABILITY, PHYSICOCHEMICAL AND SENSORY CHARACTERISTICS OF PROBIOTIC COCONUT JUICE DURING COLD STORAGE

OLAIDE OLAWUNMI AJIBOLA^{1,2}, SAMUEL LIHAN², AHMAD HUSSAINI¹, CIRILO NOLASCO HIPOLITO³, OCTAVIO CARVAJAL ZARRABAL⁴, SHAHRUL RAZID SARBINI⁵ AND SHARIFAH AMINAH SYED MOHAMAD^{6*}

¹Faculty of Resouce Science & Technology, Universiti Malaysia Sarawak, Kota Samarahan, 94300, Malaysia. ²Institute of Biodiversity and Enviornmental Conservation, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia. ³Instituto of Biotechnology, Universidad Del Papaloapan, Circuito Central 200, Col. Parque Industrial, CP, 68301, Tuxtepec, Oaxacs, 68000, Mexico. ⁴Institute of Forensic Medicine, University of Veracruz, SS Juan Pablo II s/n, 94294 Boca del Rio, Ver., México. ⁵Faculty of Agriculture, Science and Technology, Universiti Putra Malaysia Bintulu Campus, 97008, Jalan Nyabau, Malaysia. ⁶School of Biology, Faculty of Applied Sciences, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia.

*Corresponding author: sharifah459@uitm.edu.my

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Abstract: Probiotic fermentation has gained considerable attention in the pharmaceutical and food industries. Milk-based products are not in demand among vegetarians, people with allergies to certain proteins, and lactose-intolerant consumers. Therefore, there is a genuine interest in the production of crop juice-based probiotic beverages with probiotic potentials. The objective of this study is focused on the development and storage of probiotic coconut juice using lactic acid bacteria (LAB) as a starter. The viability of the probiotic, its physicochemical properties, and antibacterial potentials of the stored probiotic coconut juice employing LAB (*Lactobacillus casei* ATCC 393, *Lactobacillus plantarum* ATCC20174, *Lactobacillus rhamnosus* ATCC 7469, and *Lactococcus lactis* IO-1) as a single starter culture were studied. Sensory tests were also performed on the samples. There was an increase in total acidity production and a decrease in pH and brix levels, as well as phenolic, antioxidant and tannin contents during the refrigerated condition. At weeks three and four, coconut juice inoculated with *L. lactis* IO-1 samples had the highest total acidity (1.32%). However, the level of phenolic compound, antioxidant, and tannin contents showed a slight decrease during storage. The probiotic strains were viable throughout the refrigerated condition. *L. lactis* IO-1 showed greater viability compared with other strains (8.426 log CFU/mL). There were no significant differences between all the samples in terms of taste, aroma, colour and appearance. It could be inferred from this study that high acidity and the presence of inhibitor phenolic compounds in the probiotic coconut juice have no negative impact on the viability of the probiotics and antibacterial potential of the samples throughout storage. Hence, probiotic fermentation could provide an alternative outlet for coconut juice utilization, and could be used to produce novel probiotic beverages for consumers, especially in terms of sports nutrition.

Keywords: Coconut juice, probiotic, antioxidant, sensory test.

Introduction

The term “probiotics” means “for life”, but in terms of health or beneficial microbes, probiotics can be defined as “viable or inviable microbial strains (ruptured or intact; spore or vegetative) that are potentially healthful to the host” (Zendeboodi *et al.*, 2020). According to the definition, probiotics can be divided into three classes; true probiotic (viable and active strains), pseudoprobiotic (viable and inactive strains,

in vegetative or spore form), as well as ghost probiotic (non-viable or dead strains, in ruptured form). However, each of these classes is divided into two groups based on their site of impact or action (in vivo or in vitro). For example, a probiotic cell that produces a healthy metabolite or bioactive compound in a diet matrix is considered a “true probiotic external”. But when this viable and active probiotic is transformed into the system to perform its specific function in