

Probiotic Fermentation of Coconut Juice

Ajibola, O.O., Lihan, S.* , Awang Husaini, A.A.S. and Ngieng, N. S.

Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia.

*Corresponding author's email: lsamuel@unimas.my

INTRODUCTION

Among all fruit beverages, coconut water is considered to be an attractive fruit for drink and industrial exploitation due to its high nutritional value and some potential therapeutic properties. Coconut water (CW) contains sugar, organic acids, lipids, and mineral and has enzymes (Arditti, 2008). The overproduction of coconut results in an excess of fruits and increases in wastage, since coconut water has a limited shelf life when stored at room temperature thus reducing its quality for consumption (Matsui, 2008). On the other hand, improvement in the industrial production and efficiency of thermal treatment has decreased its shelf life and bioactive compound (FAO, 2000; Tan, 2014; Prades, 2012). Nevertheless, to improve the shelf life coconut water, the use of lactic acid bacteria (LAB) could be preferred because it increases shelf life and higher cell viability is present at time of consumption.

Multiple literatures have reported that employing probiotics in food enhanced health benefits, including anti-inflammatory agent, anti-obesity, anti-diabetic, anticancer and antioxidant activities (Agerholm-Larse, 2000; Gotcheva, 2002; Nomoto, 2005). Probiotics have been successfully incorporated in dairy based food products. However, increasing demand for low-fat, low cholesterol and lactose intolerance food products has created a great variety of non-dairy functional products coming from fruits and vegetables. Presently, fermentation accounts for half of the world food production to enhance shelf life and getting rid of unwanted compound in the end product. Kantachote (2017) reported a process using *L. plantarum* to produce functional coconut water that was found to sustain roughly 7-8 log CFU/mL at 4 °C for 28 days. Nevertheless, there is now an increasing interest in the development and improvement of non-dairy beverages based on probiotic with LAB, because they are perceived as healthy and refreshing food beverages, likewise having flavor profiles which are attractive to all consumers. Therefore, in the present study, the ultimate aim was to determine the fermentation capabilities, growth and viability of LAB in pasteurized and unpasteurized coconut beverage using *Lactococcus lactis* IO-1 strains based on chemical and microbiological analyses.

METHODS AND MATERIALS

Microbe and growth medium

Lactococcus lactis IO-1 (*L. lactis*) from the stock cultures at -20 °C was thawed and 100 µl was inoculated into 10 ml of culture media containing glucose (20 g) and yeast extract (5 g) in g/l. The culture media was incubated at 37 °C with shaking for 18 h in order to achieve a cell density of 10⁸ CFU/mL.