

## Development of carrot-based synbiotic beverage

A.D.P.S. Alwis<sup>a</sup>, O.D.A.N. Perera<sup>a</sup> and H.L.D. Weerahewa<sup>b</sup>

<sup>a</sup>Department of Food Science and Technology, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka, Makandura, Gonawila, 60170, Sri Lanka; <sup>b</sup>Department of Botany, The Open University, Nawala, Nugegoda, Sri Lanka

\*Corresponding author: [paramee.alwiss@gmail.com](mailto:paramee.alwiss@gmail.com)

In recent years, the consumer demand for functional foods has steadily increased beyond providing basic nutrition due to its ability to reduce the risk of certain health problems including cancer, osteoporosis, and even childhood blindness. Therefore, the products with probiotics and prebiotics show considerable promise for the expansion of the functional food industry. This study was carried out to develop a carrot-based synbiotic beverage. Carrot is comprised with many functional food components such as vitamins (A, D, C, and K), minerals (calcium, potassium, phosphorus, sodium, and iron) and Fructo-oligosaccharide (FOS) and Inulin as prebiotics. *Lactobacillus casei* 431<sup>®</sup> is a probiotic microorganism which is intentionally introduced into fruits and vegetable juices due to its great activity and survivability. In this study, a carrot beverage was formulated by incorporating *Lactobacillus casei* 431<sup>®</sup> as the probiotic microorganism while leaving soluble fibers like FOS and Inulin of carrot to act as the prebiotic. Fermentation of the beverage was carried out for 0, 2 and 4 h. A sensory evaluation was done using a ranking test for overall acceptability with a panel of 30 semi trained panelists to identify the best time duration for fermentation. The best fermented beverage was selected and weekly investigated for counts of viable *Lactobacillus casei*, counts of yeast and mold, pH, total soluble solids (<sup>o</sup>Brix), titratable acidity, dietary fiber, reducing and non reducing sugar and sensory characteristics for a period of six weeks under refrigerated (5±1°C) storage. The 2 h fermented beverage yielded the highest consumer acceptability and on completion of the fermentation, the counts of viable *Lactobacillus casei* were greater than the standard value of 10<sup>8</sup> CFU/ mL for functional foods. Titratable acidity increased significantly (p≤0.05) during storage due to the production of lactic acid by probiotic microorganisms and there was no significant difference (p ≤ 0.05) between the amounts of dietary fibers during the shelf life of the beverage. This study concludes that carrot-based synbiotic fermented beverage could serve as a ready to drink product for 6 weeks of storage under refrigeration, meeting the standards (10<sup>8</sup>-10<sup>10</sup> CFU/ mL) of a functional drink.

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**Keywords:** FOS, inulin, Prebiotics, probiotics, synbiotic

## Optimization

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**Acknowledgement**  
PLC for culture pr

**Keywords:** Carrot