Suggested Reference


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HIGH PRESSURE AND THERMAL PROCESSING OF KIWFUIT PUREE: 
THE EFFECT ON ANTIOXIDANTS AND VITAMIN C

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High Pressure (HPP) and thermal processing (TP) are two techniques employed for pasteurization within the fruit product industry. Currently, thermal processing techniques dominate the fruit juice industry in terms of microbial reduction. However, it is largely known that thermal treatments affect thermolabile vitamins, thus compromising the nutritional quality of fruit juices. This is where HPP presents itself as an non-thermal alternative method that relies on the application of high pressures for fruit juice preservation. HPP commercial fruit products such as juices, nectars and purees, are emerging worldwide. In this study, kiwifruit was chosen due to the high relevance to New Zealand and the high content of vitamin C and antioxidants.

Introduction

The main objectives of this research are to assess the effect of HPP and TP on kiwifruit puree...
1. Vitamin C retention
2. Antioxidant activity
3. Overall sensory appreciation

Objectives

Experimental design and method

- High pressure processing at 200 MPa and 600 MPa was tested
- Thermal processing experiments of kiwifruit puree at temperatures within 85 - 105°C were carried out
- Vitamin C assay was done via titration method
- Antioxidant activity was assessed by spectrophotometry at 420 nm and expressed in terms of radical scavenging activity (RSA)
- Sensory analysis was carried out via triangular taste test

Results and Discussion

- Vitamin C content in fresh kiwifruit samples ranged between 50 mg and 66 mg per 100 g of kiwifruit puree
- Radical scavenging activity (RSA) ranged between 51% and 78%
- HPP for 30 minutes at 200 MPa and 600 MPa did not affect vitamin C retention, Ca/Cao (Fig. 2)
- A HPP treatment of 600 MPa for 20 minutes did not affect antioxidant activity (Fig. 3)
- The triangular taste test showed that there was no significant difference in taste between HPP and freshly prepared (non processed) kiwifruit nectar
- Thermal treatments at 85°C, 95°C and 105°C for 15 to 60 minutes caused a significant reduction in the antioxidant activity.
- The effect of thermal processing at 85°C on kiwifruit puree RSA is shown on Fig. 5