

THESIS INFORMATION

INTRODUCTION

Thesis topic: Application of Ohmic heating for pasteurization of pomelo juice

Major: Food Technology

Major code: 62540101

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CONTENT

Pomelo (*Citrus maxima*) juice contains high amount of nutrients and bioactive compounds. Unfortunately, it can be easily contaminated with pathogenic microorganisms, spoilage microorganisms and changed in delamination, and turbidity by pectin methylesterases (PME). Ohm heating (OH) is an advanced heating method that pasteurizes/sterilizes fruit juice to inactivate the growth of microorganisms and enzyme while minimizing changes in nutritional and organoleptic qualities of the juice. The efficiency of OH depends on the system parameters and the characteristics of the specific food products. Therefore, each different kind of food will have different changes in chemical, physical, sensory, or microbiological properties when subjected to OH.

This study examined the impact of OH on the quality of pomelo juice, including:

- 1) Studying on the effect of frequency, electric field strength, and temperature parameters of OH on microorganisms in pomelo juice,
- 2) Studying on the effect of frequency and temperature parameters of OH on enzymes in pomelo juice,
- 3) Studying on the effect of frequency and electric field strength of OH on bioactive compounds in pomelo juice.

Scientific contribution

In term of academics:

Research on Ohmic heating method for pasteurization of pomelo juice identified: The electric field in Ohm heating had the effect of increasing the inactivation rate of *S. Enteritidis*, *E. coli* O157:H7, *L. plantarum*, pectin methylesterase. The effectiveness of the microorganisms inactivation and changing concentrations of specific chemical compounds were influenced by the frequency and electric field strength. The inactivation parameters (D, z, k, E) of *E. coli* O157:H7, *S. Enteritidis*, and *L. plantarum* were determined.

In term of applications

Pomelo juice pasteurized by the Ohm heating method had a higher quality than the juice pasteurized by the conventional heating method. The appropriate pasteurization parameters were at frequency of 60 Hz, electric field strength of 30 V/cm which had the effect of increasing the inactivation rate of microorganisms and enzymes while still maintaining stable the characteristic chemical compounds in pomelo juice. Research results have shown that Ohmic heating method can be applied to maintain the quality of pasteurized pomelo juice.