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EDUCATION

- 1999-2002 **School of Biological and Chemical Engineering, Nanyang Institute of Technology, Nanyang, Henan Province**
Major in Food Engineering
- 2002-2004 **School of Food and Biological Engineering, Zhengzhou University of Light Industry, Zhengzhou, Henan Province**
Received Bachelor's degree in Food Science and Technology, July 2004.
- 2004-2006 **School of Food Science and Technology, Jiangnan University, Wuxi, Jiangsu Province**
Candidate for Master's degree in Food Science and Technology, July 2006.
- 2006-2009 Direct to candidate for PhD in Food Science and Technology.

EXPERIENCE & TRAINING

- 2007-2009 Research on the technology and mechanism of high-efficiency microwave freeze drying of fruits and vegetables
- 2005-2006 Research on sterilization technology of dehydrate fruits and vegetables
- 2004 Research on extending shelf life of fresh edible mushroom
- 2002 Research on breaking-wall technology of bee pollen and development of a new fermented bee pollen beverage

HONOR & SCHOLARSHIP

- July, 2004 Excellent Thesis of Zhengzhou University of Light Industry
- 2002-2003 First grade scholarship and merit student of Zhengzhou University of Light Industry
- July, 2002 Excellent graduate of Nanyang Institute of Technology
- 1999-2002 Scholarship of Nanyang Institute of Technology for 3 times, Excellent Student of Nanyang Institute of Technology twice.

Research on Technology and Mechanisms in High-efficiency Microwave Freeze Drying of Fruits and Vegetables

Supervisors: Prof. Zhang Min (JNU) and Prof. Arun S. Mujumdar (NUS)

(Outline)

Abstract

General Introduction

1. Introduction
2. Aim and Motivation of the Thesis Research
3. Objectives and scope

Chapter I Literature Review

1. Development of freeze drying technology

2. Development of microwave freeze drying technology
3. Advantage and disadvantage of microwave freeze drying technology
4. Problems in application of microwave freeze drying
5. Objective of the present work

Chapter II Research on Formation of Dielectric Cores by Pretreatment to Enhance Microwave Freeze Drying Efficiency

1. Study on the pretreatment technology of raw materials before drying
2. Effect of dielectric materials on microwave freeze drying process
3. Analysis of results

Chapter III Comparison of High-efficiency Microwave Freeze Drying, Ordinary Microwave Freeze Drying and Conventional Freeze Drying

1. Comparative study on the process of three drying methods
 - 1) Drying Velocity
 - 2) Drying Time
 - 3) Energy Consumption
 - 4) Quality of final products
2. Effect of dielectric core on the quality of final products
 - 1) Final moisture content
 - 2) Texture
 - 3) Nutrition composition
 - 4) Color

Chapter Heat Transfer Model and Sterilization Mechanism for Materials with Dielectric Cores during Microwave Freeze Drying

1. Heat transfer model of dielectric-material-assisted microwave freeze drying
2. Sterilization properties of dielectric-material-assisted microwave freeze drying

Chapter V Mass Transfer for Materials with Dielectric Cores during Microwave Freeze Drying

1. Microwave freeze drying characteristics of materials with dielectric cores
2. Mass transfer equation building of materials with dielectric cores in microwave freeze drying
3. Determination of unknown coefficient in the mass transfer equation

Chapter VI Isothermal Absorption and Desorption Properties of Materials with Dielectric Cores following Microwave Freeze Drying

1. Study of isothermal absorption
2. Study of isothermal desorption
3. Analysis of results

Chapter VII Storage of the High-efficiency Microwave Freeze Drying Products

1. Effects of different package, environment temperature and humidity on physical, chemical and microbiological properties of products
2. Glass transition temperature and **glass storage**
3. Determination of optimal conditions for storage of the final products

Chapter VIII Conclusion and Future Work

1. Conclusions and Summary of results
2. Recommendations for future work

Acknowledgements

References