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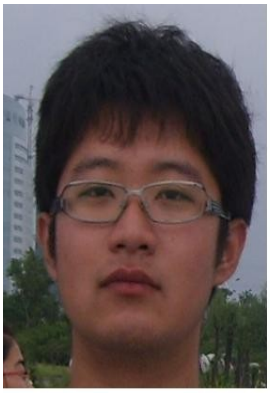

EDUCATION

2004-2008: **School of life sciences, GuizhouUniversity, Guiyang GuizhouProvince:** Bachelor's degree in Food Science and Technology
2008-2013: **School of Food Science and Technology, Jiangnan University, Wuxi, Jiangsu Province:** Master- PhD combining study in Food Resource Development Engineering under Food Science and Technology

EXPERIENCE & TRAINING

2007-2008: Study on the riddling of complex preservative film in capsicum

Thesis Topic

Quick Freeze-drying of Some Fresh-cut Vegetables Based on Combined (Osmotic, Microwave-FD) Dehydration Processes and Study of Storage Mechanisms of Dried Products

Advisor: Prof. Min Zhang, Jiangnan University, Wuxi, China
Co-Advisor: Prof. Arun S. Mujumdar, National University of Singapore, Engineering Science Program, Singapore

Abstract

General Introduction

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

Chapter Ⅰ Literature Review

1. Brief introduction to drying technology in food processing
2. Advantages and disadvantages of traditional drying technologies
3. Benefits of combining drying techniques
4. Development of freeze drying technology
5. Reasons for non-competitiveness freeze drying technology

6. Using microwave energy for freeze-drying
7. Role of vacuum application in freeze-drying
8. Usefulness of osmotic pre-dehydration in freeze-drying
9. Overcoming limitations in use of freeze-drying
10. Objectives of present work

Chapter Ⅱ Research on Osmotic Pretreatment

1. Pre-osmotic treatment of raw materials
2. Effect of different osmotic agents and process conditions on osmo-dehydration of material
3. Impact of osmotic process on certain qualities of material
4. Analyzing results and setting optimum osmo-dewatering formulations and conditions

Chapter Ⅲ Vacuum-Microwave Freeze Drying of Osmotically Pretreated Material

1. Testing usefulness of osmotic pretreatment by comparing the freeze-drying behavior of osmo-dehydrated and control samples

2. Comparative study on submitting the material to conventional and microwave freeze-drying

2.1. Effect of conventional freeze-drying on drying behavior (time, velocity, energy usage) and on quality of dried product

2.2. Effect of microwave-assisted freeze-drying on drying behavior (time, velocity, energy usage) and on quality of dried product

2.3. Effect of microwave finish-drying of conventionally partial freeze-dried material

3. Results, discussion and selection of the freeze-drying technology

ChapterⅣ Optimizing the freeze-drying conditions for combined dehydration technique

4.1. Freezing: setting optimal freezing rate and temperature

4.2. Vacuum: optimal pressure

4.3. Microwave: suitable microwave power for the drying process

4.4. Quality of the dried material:

- optimal data from subjective evaluation (different sensory attributes and overall acceptability)
- optimal data from objective tests (using equipments for color, nutrients and bioactive compounds)
- optimal data from re-hydration properties

4.5. Concluding remarks and optimal freeze-drying conditions

Chapter Ⅴ Equilibrium Moisture Sorption and Desorption Isotherms

absorption isotherms

1. Desorption isotherms (at different temperatures)
3. Analyzing, contrasting results to empirical models and getting the water activity of material
4. Conclusions

Chapter Ⅵ Storage Mechanism of the Dried Products

1. Study on storage temperature of the dried product

1.1. Determination of glass transition temperature

1.2. Deducing temperature range for proper storage

2. Effect of environmental air composition (O2, CO2, N2) on the storage properties of the finished product

3. Optimal storage conditions for final products

- microbial criteria
- shelf life under optima of preservation
- stability of the physical, chemical, mechanical and sensory properties of the dried product

Chapter Ⅶ Conclusions and recommendations

1. Summary of results and Conclusions
2. Recommendations

Acknowledgements

References