

**DEHYDRATION OF OYSTER
MUSHROOMS AND DEVELOPMENT
OF VALUE ADDED PRODUCTS FROM
DEHYDRATED OYSTER
MUSHROOMS**

BY

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M.Sc.

2006

**DEVELOPMENT OF VALUE ADDED PRODUCTS FROM
DEHYDRATED OYSTER MUSHROOMS**

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**Thesis submitted to the University of Sri Jayewardenepura for
the award of the degree of Master of Food Science and
Technology on 2006**

DECLARATION

“ The study described in this thesis was carried out by me at Food Science Laboratory of University of Sri Jayewardenepura under the supervision of Professor Athur Bamunuarachchi and Dr. K.K.D.S.Ranaweera and a report on this has not been submitted in whole or part to any University or any other institution for another Degree.”

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“We certify that above statement made by the candidate is true and that this thesis is suitable for submission to university for the purpose of evaluation.”



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ABSTRACT

Mushroom or fungi are appreciated for their good taste and nutritional value. Literally, hundred of edible species of fungi are gathered throughout the world, but less than ten species are commercially cultivated in any significant Quantity.

With the introduction of new technologies during the past two decades the cultivation of few edible mushroom species namely, *Pleurotus* spp (oyster and Abalone) and *Volvariella* species has spread over the Island.

It was estimated that around 500 tons per annum of fresh oyster mushroom produced by small scale growers in Sri Lanka Total mushroom production in 1992 was 800 tons. It was estimated to be 2000 tons in 2006.

A large volume of the national mushroom production has spoiled specially in rainy season and adoption of poor technologies to drying mushroom. The major constraints related to the mushrooms are lack of technology for dehydration preservation and storage.

Fresh, dehydrated mushrooms and value added product developed from dehydrated mushrooms is being increased during the past few years. The series of experiments were planned and performed to find suitable method to dehydrate Oyster mushrooms

by applying oven dried and sun drying method while treating mushrooms in different ways such as Blanching and dehydration, Use SMS and dehydration, use of citric acid and dehydration, etc .

The suitable method selected that the fresh Oyster mushroom soaked in water for an hour to half an hour and dehydrate. It was found that under this condition dehydrated mushroom was in a quality. The suitable temperature and time period for dehydration of Oyster mushroom was 60 C for 10-12 hrs in oven drying method. In the case of sun drying method fully sunny one day 8hr dehydrate the moisture content up to 14-15 %. Dehydration curve developed and it is shown the highest rate of removal of moisture period of time dehydration started and then it was in lower rate.

Dried mushroom sample were suspected to carry fewer amounts of bacteria as the moisture of the product is flashed of by dehydration. All valued added products were assessed for pathogenic bacteria and fungi and coli forms. Nutrient agar and potato dextrose media were used to determine Bacteria and fungi respectively. Total plate count was taken. Microorganisms in dried and value added products were very less. But higher Microorganisms were examined in fresh mushrooms.

Microorganisms in dehydrated mushrooms from both Sundrying and oven drying methods were significantly very less. Value added products contain significant amount of MOS. Coli forms were not examined in any product.

Since significant difference were observed in the nutrients composition of fresh oyster mushrooms. Fresh mushrooms are significantly lower than dehydrated oyster mushrooms due to higher moisture content of fresh mushrooms.

According to the results obtained from proximate analysis, Moisture 87.7%, Protein 3.8% Fat 0.6%, Fiber 1.2% and Ash 1.0% in fresh mushrooms. Moisture 14.9%, Protein 16.0%, Fat 0.9%, Fiber 4.0% and Ash 3.6% in oven drying method and 15% Moisture, 15.9% Protein, 0.1% Fat, 4.5% Fiber and 3.5% Ash. Was examined in sun dried methods.

Sensory quality assessment of the value added products developed from dehydrated mushrooms were evaluated separately and compare with the market sample.

A panel of 20 untrained judges were asked to evaluate Texture, colour, taste, external appearance and overall acceptability of the sample. Statistical analysis were carried out according to the non-Parametric Friedman test (Roland 200).

It was examined that the sensory and overall quality attributes are better in products from oven drying method than products from sun dried methods and market.

ACKNOWLEDGEMENT

I wish to express my sincere gratitude to my supervisors, Prof; A.Bamunuarachchi and Dr. K.K.D.S.Ranaweera, Department of Food Science & Technology, University of Sri Jayewardenepura, Sri Lanka for their valuable suggestions, guidance and support extended to me at all times during my course of study.

My sincere gratitude also grant Mrs. Indira Wickramasinghe and Mr.M.A.J.Wansapala Department of Food Science and Technology for their valuable suggestions, guidance and support to me during laboratory tasks.

I would like to express my sincere gratitude to the Science and Technology Personnel development Project, Asian Development Bank for offering a full scholarship.

I wish to thank University of Sri Jayewardenepura for enabling to be carrying out this research and for the use of their facilities during experimental works. I am very grateful to Mrs.P.R.D.Perera, Department of Food Science and technology for her kind assistance and co operation during my period of work.

Award of thanks are also due to Mr. Sisira Weerasinghe Technical Assistant Department of Food Science and technology, for helping me in numerous ways, during my research study.

I greatly appreciated the assistance provided to me by Mr.D.P.Rupasinghe Lab Assistant Department of Food Science and technology for helping me in numerous ways, during my research study. I greatly appreciated the assistance provided to me by my friends Miss H.M.U.Bandara, Miss M.B.Mahagoda, Miss D.W.C.P.Dambugolla for research work and preparing thesis documents. Finally, I wish to thank all those who helped me in various ways, to make my study a success.

Chapter 1

Introduction

1.1. General Overview

The Market for mushrooms continuous to grow due to interest in their culinary, nutritional, and health benefits. They also show potential for use in waste management. However, as fungi, mushrooms have life cycles very different from those of green plants. The choice of species to rise depends both on the growth media available and on market considerations. Oyster mushrooms, which grow on many substrates, are easiest for beginner. Shiitake mushrooms already have earned considerable consumer demand. Mushroom cultivation offers benefits to markets gardens when it is integrated in to the existing production.

Mushroom or fungi are appreciated for their good taste and nutritional value, literally, hundreds of edible species of fungi are gathered through out the world, but less than ten species are commercially cultivated in any significant quantity. The relative order of importance of the main mushroom species is *Agaricus*, *Lentinus*, *Volvariella*, *Pleurotus*, *Auricularia* and *Flammulina*. Annual world wide production of mushroom 2005 was around tons 3,423,652. Mainland USA is the leading producer followed by China and France.

In recent years, *Pleurotus* along with *Lentinus* and *Volvariella* have gained prominence as a type of a edible mushroom in eastern countries. *Pleurotus* species thrive over a wide range of subtropical climates and are representatives of white not fungi which can degrade directly the lingo cellulose wastes of nature.