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

BY

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DEVELOPMENT OF VALUE ADDED PRODUCTS FROM DEHYDRATED OYSTER MUSHROOMS

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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 *Volvoriella* 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 age 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 lees. 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 over 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 evolution Texture, colour, taste, external appearance and overall acceptability of the sample Walts et al (1989) statistical analysis were carried out according to the non-Parametric fried man test (Roland 200).

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

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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.