

## ABSTRACT

**Adel Ahmed Baker. Nutrition and Environmental Evaluation for Mushroom Products. Unpublished Ph.D. Thesis, Department of Food Science, Faculty of Agriculture, Ain Shams University, 2008.**

Cultivation of *Oyster* mushroom (*Pleurotus ostreatus* and *Pleurotus columbinus*) and *Shiitake* mushroom (*Lentinus edodes*) under the local environmental conditions or in open field and suitability of some local wastes as a cultivation media were studied. Effects of media formula, and media preparation as well as environmental conditions of cultivation on growth parameters and yield of two tested mushrooms were also studied. The highest yield of *Oyster* mushroom (*P. ostreatus* and *P. columbinus*) (388.34 and 419.90 g / kg medium) was obtained by growing on composted rice straw, while the highest yield of *L. edodes* (206.97 g / kg medium) was obtained by utilizing composted sawdust medium.

Interplanting of mushroom with colocasia resulted good suppression of the various weed. Also cultivation of two mushroom species increased significantly in fruit bodies number and weight growing in open field than growing in green house. In addition, korms weight and highest increased significantly by interplanting with mushroom as compared with colocasia monoculture.

Chemical composition of *Oyster* mushroom (*P. ostreatus* and *P. columbinus*) and *L. edodes* differed according to cultivation media. Moisture, crude protein, crude fiber and ash content for *Oyster* mushroom (*P. ostreatus* and *P. columbinus*) grown on composted rice straw were 89.51, 89.61%; 21.69, 23.86%; 9.02, 8.80% and 12.60, 12.74, respectively. While, *L. edodes* fruit bodies grown on composted sawdust contained 85.86% moisture, 20.02% protein, 11.23% crude fiber and 2.67% ash content. *Oyster* mushroom and *L. edodes* mushrooms contained essential and non essential amino acids.

Fresh fruit bodies of *Oyster* mushroom and *L. edodes* were packed and stored at 3 – 5°C retained their quality up to 14 days. Drying process for the tested mushrooms caused a reduction in protein, ether extract and microbial counts, while color index was increase. Untreated (control) and sulfured dried mushroom samples were acceptable after drying, while blanched samples were not acceptable. Stored dried mushroom samples showed a decrease pattern in protein, ether extract and sulfur dioxide contents as well as rehydration ratio, while moisture content, color index and microbial counts increased but all samples still acceptable up to 6 months. Canning process for tested mushroom decreased protein, ether extract and ash contents, while increased moisture and total carbohydrates of such mushrooms. Storing of canned mushroom samples continuously increased moisture content and color index, while a reduction in protein and ash contents was detected. However, canned samples still acceptable after 6 months of storage.

Biological experiments showed that, dried *Oyster* mushroom and *L. edodes* could be used as a hypocholesterolemic agent at 5% level.

**Key words:**

Mushroom – *Oyster* – *Shiitake* – Cultivation – Biological Efficiency – Incubation – Spawn – Inoculation – Interplanting – Quality Characteristics - Preservation – Hypercholesterolemic.

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**LIST OF ABBREVIATION**

<b>A.O.A.C.</b>	Association of official Agricultural Chemists
<b>BE%</b>	Biological efficiency percentage
<b>C°</b>	Celsius degree
<b>C : N</b>	Carbon : Nitrogen ratio
<b>cm</b>	Centimeter
<b>db</b>	Dry basis
<b>dw</b>	Dry weight
<b>FAO</b>	Food Agriculture Organization
<b>g</b>	Gram
<b>h</b>	Hour
<b>HDL</b>	High density lipoprotein
<b>Kcal</b>	Kilo calorie
<b>kg</b>	Kilo gram
<b>L</b>	Liter
<b>LDL</b>	Low density lipoprotein
<b>No.</b>	Number
<b>m<sup>2</sup></b>	Meter square
<b>m<sup>3</sup></b>	Meter cubic
<b>mg</b>	Milligram
<b>min.</b>	Minute
<b>ml</b>	Milliliter
<b>mt</b>	Metric tons
<b>OD</b>	Optical density
<b>pH</b>	Concentration of hydrogen ion
<b>ppm</b>	Part per million
<b>RDA</b>	Recommended Dietary Allowance
<b>RH</b>	Relative humidity
<b>Spp.</b>	Species
<b>t</b>	Tone
<b>TC</b>	Total cholesterol
<b>TG</b>	Triglyceride



<b>VLDL</b>	Very low density lipoprotein
<b>W</b>	Wight
<b>wb</b>	Wet basis
<b>WHO</b>	World Healthy Organization