EPRA International Journal of Agriculture and Rural Economic Research (ARER)- Peer-Reviewed Journal
Volume: 12 | Issue: 3 | March 2024 | Journal DOI: 10.36713/epra0813| Impact Factor SJIF(2024): 8.391| ISSN: 2321 - 7847

# CHANGES IN NUTRITIONAL VALUE OF OYSTER MUSHROOM DRIED BY VARIOUS METHODS

**Varpe S.N[1*], Kadlag S.D.[1], Nikam K.B.[2], Sneha Mendhe[3]**
*1*-2. Department of Botany, Nutan Arts College Rajapur,Tal-Sangamner ,Dist-Ahmednagar (M.S.) India.*
*1.Principal, Nutan Arts College Rajapur,Tal-Sangamner ,Dist-Ahmednagar (M.S.) India.*
*3. Dr.D.Y.Patil Arts Commerce and Science College Pimpri Pune. (M.S.) India.*

**ABSTRACT----------**
*Since ancient times, people have utilized mushrooms as food and medicine. In terms of edible mushroom production and consumption, India is regarded as a rising nation. However, using subpar preservation techniques lowers the quality of the crop. In light of this, the current study was created to assess the nutritional value of dried oyster mushrooms using various techniques. According to the findings, material that had been shade dried had the greatest grade mushrooms following drying. Both large and small industrial units will benefit from our approach in terms of preservation.*
**KEYWORDS:** *Nutrition, Oyster mushroom, Drying, Cultivation----------*

## INTRODUCTION

For thousands of years, people have utilized mushrooms as food and nutritional supplements. In terms of nutrition, human health, and illness prevention, it is a significant dietary item (Kakon et al., 2012). The adage "foods and medicines have a common origin" is frequently used. Dietary mushrooms have many therapeutic benefits and can be quite useful in treating certain serious illnesses. Major health benefits of mushrooms include their ability to decrease blood cholesterol, fight cancer, function as an antibiotic, and have antiviral and immune-boosting qualities (Sitotaw et al., 2020).

Pleurotus species are also thought to possess a wealth of therapeutic properties. The antioxidant and anticancer properties of Pleurotus florida Pleurotus sajor-caju exhibits anticancer activity and hypoglycemic effects in experimentally generated diabetic mice; P. ostreatus contains active constituents that impact the system of renin-angiotensin, which causes hypertensive consequences. (Gregori and Pohleven, 2007). In order to lower the risk of atherosclerosis and other disorders linked to the heart and arteries, oyster mushrooms are particularly effective at lowering the levels of total plasma cholesterol and triglycerides. These medicinal advantages might be attributed to dietary mushrooms containing some important component. In addition to being high in vital amino acids, mushrooms are also high in protein, minerals, and vitamins. Nutritional analyses of a variety of mushroom species from various origins have been conducted in several laboratories worldwide. However, the nutritional worth of locally grown mushrooms is still uncertain. Numerous aspects influence nutritional content: strain variations, growth substrate composition, culture technique, harvesting stage, and part of fruiting bodies employed for study (Galappaththi et al., 2021).

In India, people are still mostly unaware of the nutritional and therapeutic value of mushrooms. In Bangladesh, the growing of mushrooms has a very young history. These days, this nation only cultivates a small number of mushroom species, but the most well-known and extensively used ones are Pleurotusostreatus, Calocybe indica, P. florida, and P. sajor-caju (Bilal et al., 2010). In order to raise consumer knowledge of the health benefits of edible mushrooms, Evaluating the nutritional worth of these Bangladeshi-grown mushrooms was the primary goal of the study.

Nutrient content is influenced by several parameters, including harvest stage, culture technique, growth substrate composition, strain differences, and the fraction of fruiting bodies used for analysis. Indians are still generally unaware of the medicinal and nutritional benefits of mushrooms. The cultivation of mushrooms is very new in India. These

Volume: 12 | Issue: 3 | March 2024 | Journal DOI: 10.36713/epra0813| Impact Factor SJIF(2024): 8.391| ISSN: 2321 - 7847

days, this country grows very few different kinds of mushrooms; nonetheless, the ones that are growing often include Calocybe indica, Pleurotusostreatus, P. florida, and P. sajor-caju. The purpose of the experiment was to assess the nutritional contents of these Sangamner-grown mushrooms that were dried using a range of methods, including as oven, microwave, sun, and shade drying, in order to increase public knowledge of the health advantages of edible mushrooms.

## MATERIALS AND METHODS

### Collection and Identification

Oyster mushrooms (*Pleurotus florida*) was collected from the local area of Sangamner (Abhang's Mushroom Plant). Identification of Mushroom species were done at Department of Botany, Nutan Science College, Rajapur, Sangamner.

### Processing of Material

Collected mushrooms was subjected for various drying process (Shade Dried, Sun Dried, Oven Dried and Microwave dried).Fine powder was prepared by using mixer grinder.

### Nutritional Analysis

Different parameters like Protein, Crude Fiber, Lipid and Carbohydrate was performed with each sample.

### Total protein determination

5 grams of powdered mushroom were boiled in fifty milliliters of 0.1 N NaOH for thirty minutes. A DSC-200T desktop centrifuge was used to centrifuge the solution at 1000 × g once it had cooled to room temperature. We determined the total protein content in the supernatant using the procedure outlined by Lowry et al. (1951). Five grams of fresh mushrooms were removed, mixed with fifty milliliters of homogenized using a tissue homogenizer (Switzerland, Lucerne, Polytron), and phosphate buffer in order to determine the protein content. It was determined using five milliliters of homogenized and fifty milliliters of 0.1 N NaOH (Sapan and Lundblad, 2015).

### Total lipid determination

The total lipid was calculated using a slightly modified method (Folch et al. 1957). 5 gm of crushed mushroom were added to 50 milliliters of a 2:1 v/v (Chloroform:Methanol) combination, and the mixture was then gently mixed. After then, the mixture was let to stand for three days. A table centrifuge was used to filter the mixture before centrifuging it at 1000 g. The methanol's outermost layer was eliminated with a Pasteur pipette, and heating lead to the evaporation of the chloroform. The crude lipid was all that was left. Five grams of fresh mushrooms and fifty milliliters of phosphate buffer were combined, then homogenized using a tissue homogenizer to determine the total amount of lipid present. To measure the lipid content, five milliliters of homogenized and fifty milliliters of a methanol and chloroform (2:1 v/v) combination were employed (Kwon and Uhm, 1984).

### Crude fiber determination

10 grams of fat-free and moisture material were placed in a beaker, 200 milliliters of boiling 0.255 N H2SO4 were then added. The blend was brought to a boil for thirty minutes while water was added frequently to maintain a steady combination volume. After filtering the mixture through muslin fabric, the residue was cleared off completely with hot water to ensure that all acid was removed. Next, the content was moved to another beaker and mixed with 200 milliliters of boiling 0.313 N NaOH. The blend was brought to a boil for thirty minutes while maintaining a steady volume. Afterward, the liquid was strained through muslin fabric. After that, hot water, ether, and alcohol were used to clean the residue until all traces of alkali were removed. Subsequently, it was put inside a crucible, dried at 80–100 degrees Celsius for the whole night, and then the weight (We) was measured with an digital balance (Keyi: JY-2003; China). After heating the crucible for six hours to 600°C in a muffle furnace (Nebertherm: Mod-L9/11/c6; Germany), it was cooled and weighed once more (Wa). According to Bauer et al. (2001), The weight variation represents the weight of crude fiber (We-Wa).

$$Crude\ fiber\ \left(\frac{g}{100\ g}\ sample\right) = [100 - (moisture + fat)] \times \frac{We - Wa}{Wt} ofsample$$

(Raghuramulu et al.,2003)

EPRA International Journal of Agriculture and Rural Economic Research (ARER)- Peer-Reviewed Journal
Volume: 12 | Issue: 3 | March 2024 | Journal DOI: 10.36713/epra0813| Impact Factor SJIF(2024): 8.391| ISSN: 2321 - 7847

**Total Carbohydrate Estimation**

The following equation determined the amount of accessible carbohydrates:

$$Carbohydrate\ \left(\frac{g}{100\ g}\ sample\right) = 100 - [\frac{(moisture+fat+protien+ash+crude\ fiber)g}{100g}]$$

(Raghuramulu et al.,2003)

**Statistical Analysis:** Statistical analysis was done by using Instat software; version 5.0.

## RESULTS AND DISCUSSIONS

Using recommended techniques, the nutritional characteristics of oyster mushrooms dried under various circumstances were ascertained. The acquired results are displayed in Table 01 as Mean ± SD. The results demonstrate that the mushroom sample that was sun-dried had the highest protein content (3.4 ± 0.4 mg/gm), whereas the material that was oven-dried had the lowest protein content (2.6 ± 0.13 mg/gm). This suggests that whereas proteins were less damaged by sun and shade drying, they were more so by oven and microwave drying. Lipid content was assessed upon drying using several techniques. The measured lipid content values span from 0.54 ± 0.07 to 0.68 ± 0.05, suggesting that the oven-dried sample exhibits the highest possible lipid content. When compared to material dried using conventional techniques, the shade-dried material showed a higher production of both crude fiber and carbohydrates (3.4 ± 0.2 mg/gm and 6.8 ± 0.5 mg/gm, respectively). Overall findings revealed that the nutritional value of the dried mushrooms in shade was at its peak, which is advantageous from an economic standpoint and within the means of tiny mushroom farming units.

**Table: 1. Nutritional Properties of Oyster Mushroom after drying.**

| Parameter | Shade Dried | Sun Dried | Oven Dried | Microwave dried |
|---|---|---|---|---|
| **Protein (mg/gm)** | 3.26 ± 0.33 | 3.4 ± 0.4 | 2.6 ± 0.13 | 2.75 ± 0.2 |
| **lipid(mg/gm)** | 0.54 ± 0.07 | 0.57 ± 0.05 | 0.68 ± 0.05 | 0.65 ± 0.06 |
| **crude fiber(mg/gm)** | 3.4 ± 0.2 | 2.97 ± 0.17 | 3.0 ± 0.12 | 1.63 ±0.2 |
| **carbohydrate(mg/gm)** | 6.8 ± 0.5 | 5.09 ± 0.19 | 5.24 ± 0.4 | 5.1 ± 0.25 |

## CONCLUSION

The nutritional value and sensory characteristics of edible mushrooms are determined by their chemical makeup. Their differences are based not only on species but also on age, part of the fructification process, age, and the substratum. Additionally, we discovered that the nutritional benefits of the various drying methods for farmed mushrooms varied. These findings imply that, when dried in the shade, dietary mushrooms grown in India are a rich source of nutrients, particularly fiber and protein. Although they contain a small amount of fat, mushrooms are high in fiber, edible, protein, and minerals. These findings also suggest that the investigated mushrooms have a high nutritional value for people. The most significant dietary issue affecting people worldwide is a protein deficit. Protein is an essential component of nutrition.

**Acknowledgement** :- I should not miss the opportunity to express my heart – felt gratitude and regards to the Hon. magangement of Pragtik shikshan sanstha Rajapur, Tal. Sangmner, Dist. Ahemednagar (M.S.) and Principal Dr Kadlag S.D.

## REFERENCES

1. *Bilal, Ahmad & Wani, Bilal & Bodha, R & Wani, Ab. Hamid. (2010). Nutritional and medicinal importance of mushrooms. Journal of Medicinal Plants Research. 4. 10.5897/JMPR09.565.*
2. *Galappaththi, Mahesh & Dauner, Lucas & Madawala, Sumedha & Karunarathna, Samantha. (2021). Nutritional and medicinal benefits of Oyster (Pleurotus) mushrooms: a review. 1. 65-87. 10.5943/FunBiotec/1/2/5.*
3. *Gregori, Andrej & Pohleven, Jure. (2007). Cultivation Techniques and Medicinal Properties of Pleurotus spp. Food Technology and Biotechnology. 45.*
4. *Kakon, Akhter & Choudhury, Bazlul & Saha, Shusmita. (2012). Mushroom is an Ideal Food Supplement. Journal of Dhaka National Medical College & Hospital. 18. 58-62. 10.3329/jdnmch.v18i1.12243.*
5. *Sitotaw, R., Lulekal, E. & Abate, D. Ethnomycological study of edible and medicinal mushrooms in Menge District, Asossa Zone, Benshangul Gumuz Region, Ethiopia. J Ethnobiology Ethnomedicine 16, 11 (2020).*

Volume: 12 | Issue: 3 | March 2024 | Journal DOI: 10.36713/epra0813| Impact Factor SJIF(2024): 8.391| ISSN: 2321 - 7847

6. *Sapan, Christine & Lundblad, Roger. (2015). Review of methods for determination of total protein and peptide concentration in biological samples. PROTEOMICS - Clinical Applications. 9. 10.1002/prca.201400088.*
7. *Kwon, Yong-Ju & Uhm, tai-boong. (1984). A Study on the Lipid Components in Oyster Mushroom. Journal of the Korean Society of Food Science and Nutrition. 13.*
8. *Bauer, Biljana & Kulevanova, Svetlana &Jordanoski,, B. & Stefov, Viktor. (2001). Investigation of dietary fibre in some edible mushrooms from Macedonia. Nutrition & Food Science. 31. 242-246. 10.1108/00346650110396664.*