



ORGANOLEPTIC EVALUATION AND ANALYSIS OF NUTRITION OF PADDY STRAW MUSHROOM/ VOLVARIELLA SP

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ABSTRACT:

Mushrooms are considered a highly prized delight for vegetarians. Mushrooms are the only non-animal source of vitamin D with various nutritional benefits. It has found a prominent place in the kitchens of most people around the world. Mushrooms have gained unique importance these days as a low-calorie food with good quality protein and high fiber content. Edible mushrooms are also used for their medicinal properties in the present era as they have been proven to be promising with hepatoprotective, anticancer, antioxidant, antiviral, hypoglycemic and hypercholesterolemia effects. In this regard, a nutritional analysis of paddy straw mushroom was carried out and the content of various proximate components such as carbohydrates, protein, lipids, fiber and ash were evaluated and sensory evaluation was carried out in comparison with button mushroom, oyster mushroom and milky mushroom using two mushroom recipes.



KEY WORDS: Mushrooms , vegetarians , hypoglycemic and hypercholesterolemia effects.

INTRODUCTION

Mushrooms are one of the exotic food sources and should be included in any diet or menu. Mushrooms are getting preference day by day as a vegetarian food. With their attractive taste, flavor and nutritional value, low dependence on land for growth and ability to grow on various types of agricultural residual waste mushrooms are widely exploited in developed and developing countries worldwide. Beyond great taste, mushrooms are also a very nutritious addition to any recipe. Nutritionally, mushrooms are low in energy, cholesterol and fat but high in protein, carbohydrates and fiber. The protein content of mushrooms is much higher than that of various meat products and is of high quality and rich in various essential amino acids. Edible mushrooms are also used for their medicinal properties in the present era as they have been proven to be promising with hepatoprotective, anticancer, antioxidant, antiviral, hypoglycemic and hypercholesterolemia effects.

NUTRITIONAL VALUE OF PADDY STRAW MUSHROOM:

It has medicinal properties and is a functional food for human health, a source of cholesterol, starch, glycogen and high levels of protein, vitamins (vitamin C, riboflavin, biotin, niacin and thiamin) and dietary fiber. In addition, it contains fourteen amino acids, seven of which are essential, while

methionine, arginine, histidine and serine are absent. Following are the health benefits of Paddy Straw Mushroom:

- **Paddy straw mushroom is rich in nutrients:** it is rich in carbohydrates, protein, fiber, minerals and vitamins. Mushrooms are high in protein, nutritious, and provide eight amino acids that are more abundant than meat, fish, vegetables, or citrus fruits. Hence, it is a promising functional food to fight against malnutrition. Paddy straw mushrooms inhibit the growth of cancer cells: Beta D-glucan and lectins found in paddy straw mushrooms inhibit the proliferation and growth of various tumor cells such as sarcoma, colorectal and leukemia.
- **Lowers Cholesterol Levels:** It contains a large number of antioxidants, mainly phenolic acids that prevent lipid peroxidation and lowers blood cholesterol, low-density lipoprotein (LDL) cholesterol, blood triglycerides.
- **Regulates Blood Pressure:** Rice straw is a rich source of natural bioactive compounds that lower blood pressure and prevent high blood pressure. Thus, these mushrooms have hypotensive properties that reduce blood pressure and the risk of cardiovascular disease.
- **Paddy Straw Mushrooms Help Manage Diabetes:** Polysaccharides, β -glucans, lectins, lactones, terpenoids, alkaloids, sterols and phenolics found in paddy straw mushrooms restore pancreatic cell function to increase insulin input and improve glucose levels.
- **Rich in Antioxidants:** Rice straw mushrooms contain significant amounts of glutathione, lycopene, phenolics, flavonoids, carotenoids, vitamins (A and C) and ascorbic acid. These compounds have high nutritional and therapeutic values and are also a promising drug against several oxidative stress-mediated disorders.
- **Antibiotic Properties:** This mushroom is a rich source of tannins, flavonoids, triterpenoids, anthraquinones and alkaloids which act against various bacteria like *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa* and *Streptococcus*.
- **Paddy straw mushrooms help in liver protection:** Paddy straw mushrooms (500-1000 mg/kg) are rich in antioxidants that scavenge free radicals from the body and prevent liver damage by hepatotoxic agents.
- **Improving taste and nutritional value:** Incorporating paddy straw mushroom into other foods such as Cantonese sausage and brown rice improved the taste nutritional value and overall quality of the products.

Various proximate components present in the mushroom sporocarp (fruiting body) were estimated. The mushroom has a high moisture content of 90.11% on fresh weight basis which indicates the juicy nature of the mushroom. The total carbohydrate content on dry weight basis is estimated to be 22.17% which is possibly higher than meat products. The analyzed protein content of *Volverella* mushroom was 41.36% on dry weight basis which is much higher than *Pleurotus ostratus* (33.3%) and *Agaricus bisporus* (28.1%) mushrooms which are highly valued for their protein content. Crude fiber content is estimated to be 16.98% on dry weight basis. Total lipids content on dry weight basis was evaluated as 4.98% and ash content as 7.25% on dry weight basis. Paddy straw mushroom was found to be high in carbohydrate, protein and fiber.

NUTRITIONAL AND SENSORY PROFILE OF PADDY STRAW MUSHROOM:

The nutritional value and sensory properties of mushrooms are determined by their chemical composition. *Volverella volvesia* contains moisture, fiber (chitin), vitamins (thiamine, biotin, riboflavin and high amount of vitamin C), proteins, carbohydrates, fats, essential amino acids (glycine, arginine, alanine and serine etc.), important minerals. (sodium, potassium and phosphorus), unsaturated fatty acids, and also has low calorific value. The aroma of rice straw mushroom is due to carbonyl compounds and octavalent carbonate alcohol.

Table 1.1 Content of Amino Acid in Paddy Straw Mushroom

Sr. No	Amino Acid	Content
1.	Leucine	7.51
2.	Lysine	5.22
3.	Cystine	0.98
4.	Phenylalanine	5.31
5.	Tyrosine	4.82
6.	Threonine	4.92
7.	Tryptophan	14.9
8.	Valine	3.81
9.	Alanine	7.16
10.	Aspartic Acid	12.6
11.	Glutamic Acid	28.1
12.	Proline	6.64

Table 1.2 Proximate Composition of Paddy Straw Mushroom

Sr. No	Composition	Content
1.	Moisture	91.5%
2.	Dry matter	9%
3.	Total nitrogen	6.9%
4.	Crude protein	28.6%
5.	Crude fat	3.6%
6.	Crude fiber	9.6%
7.	Ash	9.9%
8.	Total carbohydrate	50%
9.	Nitrogen-free extract	42.0%

Table 1.3 Content of Mineral in Paddy Straw Mushroom

Sr. No	Mineral	Content
1.	Potassium	51.30%
2.	Oxygen	28.31%
3.	Phosphorus	8.27%
4.	Chlorine	3.57%
5.	Sulphur	2.76%
6.	Magnesium	0.98%
7.	Silicone	0.80%
8.	Calcium	0.63%
9.	Iron	0.41%
10.	Aluminum	0.29%
11.	Zinc	0.12%
12.	Rubidium	0.09%
13.	Copper	0.07%
14.	Molybdenum	0.07%
15.	Manganese	0.05%

Table 1.4 Vitamin Content of Paddy Straw Mushroom

Sr. No	Mineral	Content
1.	Vitamin A	0.002 mg/Kg
2.	Vitamin D	50.817 mg/Kg
3.	Vitamin K	0.007 mg/Kg
4.	Vitamin C	49 mg/100 g

EFFECTS OF PADDY STRAW MUSHROOM WITH METABOLITES:

Paddy straw mushroom is an excellent source of terpenes, polypeptides, steroids and various phenolic compounds such as phenolic acids, tannins and flavonoids, which are responsible for its high antioxidant capacity. Rice straw mushroom contains high amount of free phenolic compounds which are responsible for antioxidant activity. Dried straw mushrooms and mushroom fruiting bodies contain the highest amount of antioxidant enzymes; Superoxide dismutase, catalase, peroxidase, glutathione reductase, glutathione-S-transferase and glutathione peroxidase. The protein extract of paddy straw mushroom contains cardio-toxic proteins called flamutoxin and volvatotoxin which inhibit respiration in tumor cells. Paddy straw mushrooms also contain polysaccharides and proteins that have anti-tumor properties. Water and methanol extracts of rice straw mushroom have rich antioxidant properties that help prevent various diseases like cancer and cardiovascular diseases, neurodegenerative diseases and inflammation.

Table 1.4 Soluble Sugar Profile of Paddy Straw Mushroom

Sr. No	Composition	Content
1.	Arabinose	3.21 mg
2.	Fructose	2.28 mg
3.	Glucose	0.92 mg
4.	Myo-inositol	1.22 mg
5.	Mannose	2.43 mg
6.	Ribose	5.09 mg
7.	Sucrose	2.15 mg
8.	Trehalose	5.88 mg
9.	Total	23.18 mg

CONCLUSION:

Paddy straw mushroom is one of the most important medicinal fungi; It has good therapeutic value. It is beneficial for human health due to the presence of high bioactive compounds, vitamins, amino acids, fats, enzymes, minerals, sugars and amino acids. Due to the presence of phenolic acids, tannins, flavonoids and antioxidant enzymes, it has anti-inflammatory, anti-diabetic, anti-tumour, anti-viral and immune stimulating properties.

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