

# Comparison of food ingredients of Oysters mushroom cultivation on agricultural waste

## Abstract

The cultivation of edible mushroom on agricultural and industrial waste can be considered as one of the most effective solutions. The use of waste as a substrate for mushroom not only increases its nutritional value and contributes to food security in the community, but also reduces environmental pollution. In this study, Sweet fruit pleurotus Florida Florida was cultivated on two types of agricultural waste (rice straw and wheat straw) and then the amount of yield, fat, ash, sodium, potassium, calcium, zinc and iron was evaluated. Statistical studies indicated that cultivation mushroom on the wheat straw was more suitable for fruiting and nutritional value.

Volume 9 Issue 2 - 2019

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**Received:** March 14, 2019 | **Published:** March 28, 2019

## Introduction

It was predicted that in the 20th century the world would face a major crisis of population and nutrition, and now in the 21st century, not only has the problem of population and nutrition crisis struck us, but also a bigger problem called insecurity in nutrition. The presence of synthetic and chemical substances in food has caused genetic mutations. Humans have diseases that are rooted in nutrition. Even taking medications is a disease. Unlike all technological developments, the most advanced industrialized countries recognize agricultural sector development not only as complementing the industry, but also the importance of food production in relation to their national security. Definition of waste refers to quantities of a particular commodity and a derivative product that is not consumed in a cycle and can cause irreparable damage to the economy. Conversion industries are one of the ways to make optimal use of agricultural wastes that have economic impacts, such as income generation and employment. The cultivation of edible fungi on agricultural wastes is one of these strategies, which can also contribute to food security of the community. Edible mushrooms are very valuable sources of salts, essential amino acids, vitamins, essential fatty acids and dietary fiber. Cellulose, hemicellulose and lignocellulosic material in the fungus substrate is highly digestible after harvesting and is used as a nutritious food for animal feed in dams. In addition, the substrate in agricultural sector is also used as a fertilizer for the cultivation of agricultural land. In this research, the use of two types of agricultural waste (rice straw and wheat straw) as a culture bed for oral mollusks in Pleurotus Florida, the nutritional composition of the mussels, is investigated and compared.

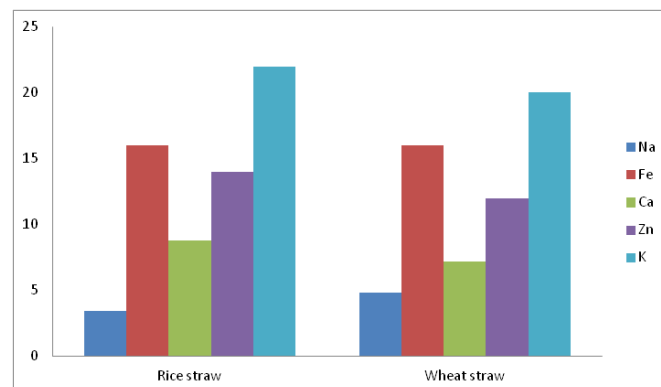
## Methods and materials

The seeds of mushroom, agricultural wastes and all chemical materials, obtained from Cultivation of the Damavand Co., Iran. The chemical tests performed on the Pleurotus Florida mushroom including the measurements of ash, fat, calcium, zinc, iron, potassium and sodium were determined according to international standards. All tests are performed in 3 replications and the results are three replicates. In order to evaluate the data, SPSS v.12 software was used.

## Results and Discussion

As Figure 1 shows, the Pleurotus Florida mushroom (P.m.) grown on rice straw had the highest amount of zinc and potassium relative to the P.m.grown on wheat straw. The amount of iron and sodium in

both substrate are almost the same. Mushrooms are a very suitable source for mineral salts. Potassium, phosphorus followed by calcium and magnesium form the main components of the pleurotus species, and ash contain of pleurotus species are about 56-70%. Especially potassium, which alone contains about 45% of the weight of ash.<sup>1</sup> Zinc content in pleurotus species are abundant, but the type of culture medium is affected. Sodium is generally low in fungi,<sup>2</sup> and this is a good proportion of sodium to calcium, and the use of this fungus is beneficial for those who have high blood pressure and who are inevitably in control of sodium entry to the body.

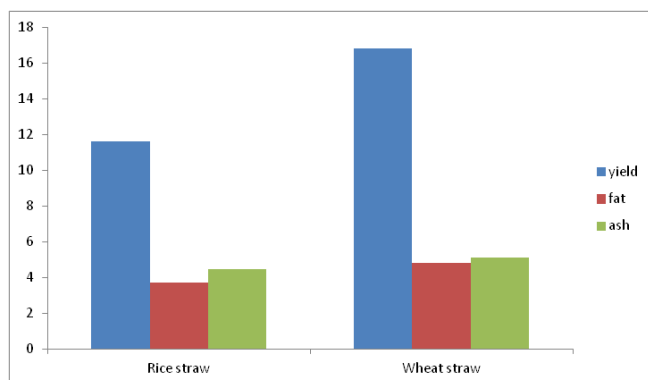


**Figure 1** Investigating and comparing the amount of minerals in Pleurotus Florida grown on rice straw and wheat straw based on dry weight.

The amount of calcium in the mushroom is significantly higher than fresh fruit and vegetables. Research has shown that pleurotus rich in protein and ascorbic acid, which helps absorb iron in the body, so the iron in the pleurotus species is absorbed by the body. As shown in Figure 2, the yield of Pleurotus Florida on the wheat straw compared to rice straw, is remarkably more than others, while amount of the fat is effective able reduction. Estimated ash content in the Pleurotus Florida mushroom is approximately equal to the ratio of wheat straw and rice substrates. The results are very similar to the results obtained by Sheshirka et al. In 2005.<sup>3</sup> The amount of fat in various species of fungi varies from 9.4 to 1.08 percent dry weight. Pleurotus species have about 3 to 8.50% fat, which are unsaturated fatty acids and are full of linoleic acid.<sup>4</sup> Pleurotus can be a good nutritional factor for patients with high cholesterol.

## Acknowledgments

None.



**Figure 2** Investigating and comparing the fertility, fat and ash content of edible *Pleurotus Florida* mushroom grown on rice straw and wheat straw based on dry weight.

## Conflicts of interest

The authors declare that there is no conflict of interest.

## References

1. Adejoye OD, Adebayo-Tayo BC, Ogunjobi AA, et al. Effect of carbon, nitrogen and mineral sources on growth of *Pleurotus florida*, a Nigeria edible mushroom. *African Journal of Biotechnology*. 2006;5(14).
2. Shashirekha MN, Rajarathnam S, Zakia Bano. Effects of supplementing rice straw growth substrate with cotton seeds on the analytical characteristics of the mushroom *Pleurotus florida*, Block & Tsao). *Food Chemistry*. 2005;92(2):255–259.
3. Ahmed Syed Abrar, Kadam JA, Mane VP, et al. Biological efficiency and nutritional contents of *Pleurotus florida* (Mont.) singer cultivated on different agro-wastes. *Nature and Science*. 2009;7(1):44–48.
4. Naraian R. Influence of different nitrogen rich supplements during cultivation of *Pleurotus florida* on corn cob substrate. *The Environmentalist*. 2009;29(1):1–7.