

Nutritional Ingredients and Evaluation of Nutritional Value

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Abstract. Black fungus is a common dish, rich in a variety of nutrients such as protein, polysaccharide, fat, amino acids, dietary fiber, in addition to a variety of mineral elements such as calcium, iron, and phosphorus and so on. In this paper, the nutrient composition of black fungus was evaluated by wild and artificial cultivation. On this basis, the nutritional value of black fungus was evaluated.

1. Introduction

Black fungus in our country has a long history of cultivation and consumption, as a kind of food and edible dishes, black fungus also has a certain medicinal value. Black fungus as a vegetable, with delicate meat, nutrient-rich advantages, has always been loved by the people. As a drug, black fungus Gan Ping, can play qi yin, blood and blood pressure, in addition to black fungus for hemorrhoids, blood loss and other diseases also have a certain therapeutic effect. In recent years, the research on the black fungus has been deepening, and the laboratory analysis of the composition of the black fungus has found that the black fungus is rich in protein, dietary fiber, trace elements such as calcium and iron. Modern scientific research found that iron elements for the health of the body has a key role, it is because the iron element is hemoglobin, myoglobin and a variety of essential components of oxidase, contribute to the body of oxygen transmission and transportation. Black fungus contains more types of dietary fiber, including cellulose, hemicellulose, lignin, pectin and a variety of soluble polysaccharides and so on. Dietary fiber has a positive effect on human health, modern scientific research found that dietary fiber can effectively reduce the human blood concentration and lipid concentration, but also can effectively remove cholesterol in the human body, in addition to dietary fiber has a certain role in constipation, can improve constipation symptoms. Black fungus can also effectively absorb the body of impurities and harmful substances, remove intestinal waste, to maintain the human intestinal clean. Appropriate consumption of black fungus can increase satiety, thereby reducing the intake of other foods, thus helping to prevent obesity. Based on the above advantages of black fungus, it can be used as a supplement of human calcium and other elements of food; for the work of easy to absorb a large number of toxic substances such as absenteeism, chemical, wool, etc. can play a role in the removal of toxic substances, for these Job staff more health care role.

Black fungus is generally leafy, the edge of the performance of undulating, black fungus thickness is generally thin. In the early growth of black fungus for the soft gum, the surface has a certain viscosity and flexibility, with the growth cycle longer, the hardness will appear to some extent increased. Mature black fungus after drying will be a strong contraction, and ultimately become black and hard leather objects. Black fungus has a high demand for growth environment and has some cold tolerance, but it is sensitive to temperature change. Based on these factors, the black fungus is generally distributed in the temperate regions of the northern hemisphere, and many provinces in China have artificial black fungus cultivation base, Including Heilongjiang, Hubei, Yunnan, Guizhou, Guangxi, etc., indicating that the adaptability of black fungus strong.

2. Experimental Process

2.1 Materials and Methods

Ingredients: Black fungus strains provided by the local agricultural sector, black fungus cultivation formula according to the specific needs of the preparation, the materials used, including mixed wood

chips, cottonseed hull, bran, gypsum, cultivation nutrients by the staff to configure, the water content of 60% -65 %, PH is controlled between 6.5-7.5.

2.2 Cultivation Methods and Sample Collection

In the local Academy of specialized cultivation base for cultivation of black fungus, all strains are used bag. The cultivated bag used was made of polyethylene, and the strain was transplanted into the culture room. Will be training room temperature and humidity and light and other factors to control, the temperature is generally controlled at 24-27 degrees, to maintain ventilation. After 50 days of culture in the culture chamber, the strain was mature and the opening treatment was carried out. Then enter the ear stage, this time need to ensure that the black fungus to get a strong light exposure, while the need to control the external environment temperature of 18-22 degrees or so. When the black fungus grows, the leaves are fully unfolded, the color gradually becomes lighter, indicating that the black fungus grows mature and can be picked. The pickled black fungus samples were subjected to natural air treatment to obtain black fungus products.

2.3 Analysis of Nutritional Components of Auricularia Auricula

The nutrient contents of water, protein, fat, amino acid, dietary fiber, polysaccharide, calcium, phosphorus and iron contained in black fungus were tested according to the corresponding determination method and standard.

2.4 Dark Fungus Nutrient Composition Test Results

The results showed that the moisture content in the black fungus was 13.5g / 100g, the protein content was 13.0g / 100g, the crude polysaccharide content was 7.54g / 100g, the amino acid content was 11.25g / 100g, the fat content was 0.39g / 100g, the dietary fiber content For 51.85. There are also minerals such as calcium 614.2mg / 100g, phosphorus 314mg / 100g, iron 35.5mg / 100g.

3. Discussion

3.1 Nutritional Composition And Chemical Analysis Of Black Fungus

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3.1.2 Black Fungus Polysaccharide

The analysis of the nutrient composition of Auricularia auricula showed that the most important chemical constituents of Auricularia auricula were polysaccharides of Auricularia auricula, and further analysis showed that polysaccharides from Auricularia auricula could be subdivided into four kinds, namely F I -A, F I -B, F II and F III. After purification of Auricularia auricula polysaccharide, its main components are glucose, mannose, xylose and hexuronic acid. The polysaccharide contained in the black fungus can act as an anticoagulant activity, which is why the black fungus helps to reduce the blood concentration, indicating that the black fungus has a positive health effect on the human blood.

3.1.3 Fungus Melanin

Through the nutrient analysis of black fungus extract, you can get fungus melanin, which is a polysaccharide peptide, the main component is glucose, galactose, mannose, etc., these sugars can be quickly dissolved in water when the monomer, the relevant research Found that these carbohydrates for the body to promote immune function.

3.1.4 Other Ingredients

Black fungus also contains ergosterol, dihydroergergic, lecithin, lecithin and sphingomyelin, also contains vitamin A, vitamin D2 and vitamin K and so on.

3.2 Analysis of Nutritional Value of

3.2.1 Black Fungus with Hypolipidemic Effect

The results showed that the serum total cholesterol level of the rats in the experimental rats was significantly decreased, and the serum low density lipoprotein cholesterol could also be used in the rats. To reduce the effect.

The results showed that polysaccharides from *Auricularia auricula* could effectively reduce the content of serum triglyceride in blood and also reduce the content of TC and LDL-C in the blood. The mechanism of polysaccharide from *Auricularia auricula* polysaccharides can be effectively enhanced. The body's own immune system, but also can promote the internal circulation of liver and gallbladder, this process will help the liver internal substances and the exchange of external substances, to promote the utilization of liver and gallbladder tissue to achieve a virtuous cycle, and ultimately can effectively reduce blood lipid levels, But also can effectively strengthen the human immune system.

3.2.2 Black Fungus with Anti-Thrombotic Effect

Related studies have found that rats taking black fungus extract after the body of serum total cholesterol, triglycerides to a certain degree of reduction, in addition to the body of low-density lipoprotein levels will decline, while high-density lipoprotein content There will be an increase. The anticoagulant activity of the black fungus extract is studied. It is found that the anticoagulant activity mechanism of the black fungus is antithrombin, and the glucuronic acid residue contained in the black fungus has a crucial role in this process. In addition, black fungus polysaccharide can also play a positive role in atherosclerosis. The researchers tested three groups of mice, in which the control group fed the general feed, the experimental group was fed with black fungus polysaccharide feed, after a period of time on the mice were analyzed, the control group mice aortic intima appeared Multiple plaques.

3.2.3 Anti-Radiation Effect of Black Fungus

The rats in the experimental group were injected with a certain amount of black fungus before irradiation. The results showed that all mice in the control group were all irradiated with radiation, while the observation group had 12.5% survival rate, and the injection volume Larger groups have a greater survival rate. In addition, the bone marrow of the mice was found to be significantly higher than that of the untreated black fungus extract. The above experimental results show that the black fungus extract helps to resist external radiation, reduce the damage of various radiation on the body.

3.2.3 Black Fungus Has Antioxidant and Anti-Aging Effect

The results showed that the polysaccharides of *Auricularia auricula* could effectively improve the activities of peroxidase and glutathione peroxidase in mice, and the mice were treated with polysaccharides Activity, on the other hand can also effectively reduce the content of malondialdehyde in the body, this mechanism on the surface of black fungus polysaccharide can effectively improve the body's antioxidant capacity.

3.2.4 Black Fungus with Hypoglycemic Effect

The results showed that the blood glucose concentration could be reduced by adding the extract of *Auricularia auricula* and the extraction of black fungus extract in diabetic mice and normal mice. Blood glucose levels in the mice are maintained at normal levels because the organism's own mediation mechanism for blood glucose levels is functioning. In-depth study found that the mechanism of black fungus to reduce blood sugar may be that the black fungus polysaccharide can effectively reduce the alloxan on islet B cell damage or improve the function of damaged cells, thereby effectively increasing the secretion of insulin in the body, and ultimately reduce the blood glucose levels The

3.2.5 Black Fungus Has Anti-Tumor Effect

The mice were injected with black fungus extract, compared with the control group, found that the observation group of mice survival time was significantly longer than the control group. The activity of various enzymes in mice was tested. The results showed that the polysaccharides of *Auricularia auricula* had a certain effect on the tumor.

4. Summary

Black fungus can be used as a delicious dish, but also as a medicine for the treatment of diseases, especially for the current popular diseases such as high blood pressure, high blood sugar, high blood lipids and other significant role, while the patient will not cause other effects, So it has a strong nutritional value and medicinal value. In this study, the nutrient composition and nutritional value of

Auricularia auricula were studied in depth. It was found that the nutritional components of *Auricularia auricula* were mainly protein, amino acid, dietary fiber and mineral, and the effect on human health was multifaceted. It is necessary to increase the research and cultivation of black fungus.

References

- [1]. [J]. *Edible fungi*, 2016, 38 (2): 72-73. [J]. *Edible fungi*, 2016, 38 (2): 72-73. [J]. *Edible fungi*, 2016, 38 (2): 72-73.
- [2]. Fu Lizhong, Cheng Junwen, Hu Chuanjiu, et al. Effects of Chestnut Branches on Yield and Nutritional Components of *Auricularia auricula* [J]. *China Forest Products*, 2015 (1): 1-3.
- [3]. Yao Ping. Black fungus's high nutritional value [J]. *Agricultural knowledge: melon fruit*, 2015 (17): 60-60.
- [4]. Shi Shu, Luo Zhang. Analysis of wild black fungus in different areas of Tibet [J]. *Food Research and Development*, 2017 (2): 33-36.
- [5]. Yang Wenbin. Nutrition and growth and development conditions of fungus [J]. *Jilin Vegetable*, 2016 (6): 38-38.
- [6]. Chai Xinyi, Wu Lidi, Yu Shijun, et al. Analysis of Main Nutrition and Active Components of Wild Shield Tegut [J]. *Food Science and Technology*, 2017 (3).