

NUTRITIONAL VALUE OF MUSHROOM INTAKE AND ITS IMPACTS ON HUMAN HEALTH LINKED WITH BIOCHEMISTRY

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ABSTRACT:

Objectives: In this study, we discuss the mushrooms that we can eat. These are macroscopic, and we can see them with our eyes easily. We are able to easily recognize them and pick them up by hand. In this study, we tried to recognize the benefits of mushrooms for our health and to calculate the types of species with respect to biochemistry. There are different types of mushrooms we have in our country and all over the world. People specially cultivate them and do their imports and exports.

Methodology: For cultivation purposes, we use different methods to cultivate them and get a good number of mushrooms from the land. In different areas, specialists collect samples of different types of mushrooms and perform experiments on them. They collect samples to check out the value of food, the type of chemical compounds they have, and their use as medicines in different areas. Mushrooms have lots of benefits and play an important role in our health. They have a huge amount of carbohydrates, nucleic acids, minerals, proteins, and lipids in

them. Mushrooms are one of the selected items that have a high source of nutrition in them. Its nutritional value is very high as compared to other plants or foods.

Results: We have seen that mushrooms have a high amount of nutrition in them. We also have different qualities and types of mushrooms with different percentages of nutritional value. It helps solve lots of medical issues related to human health. It helps make our immune system strong. It also has anti-virus agents and solves problems linked to therapies.

Conclusion: In this study, we conclude that mushrooms have lots of qualities and abilities to treat our most common medical issues. It protects our body from several harmful effects and diseases because it has a strong nutritional value. The level of protein, vitamins, minerals, lipids, steroids, etc. is very high. So, we can say that mushrooms work as a medicine to treat many harmful diseases, and they're an herbal medicine that also helps treat cancer.

Keywords: Nutrition, edible mushrooms, protein, vitamins, biochemistry.

INTRODUCTION:

This study is related to mushrooms and their effects on human health [1]. We also discuss its effects on biochemistry. We know that mushrooms are macro fungi because we can see them easily with our naked eye [2]. It is very easy to see and recognize [3]. We call it a food body because we use it as a source of food. We can easily pick it up with our hands and also break or cut it easily [4]. Mushrooms have different species worldwide. All types of mushrooms are not edible; there is a huge variety [5]. It has different colors and different types of shapes [6]. Mushrooms grow in different varieties of soil and choose different surfaces to grow on [7]. Mushrooms mostly grow in cool and moist places [8]. They grow up in the soil, which is why we can easily pick them up without any trouble. We notice that there are about 1.6 million fungus species, of which 14-400 are growing every year [9]. We estimated that these growing bodies are mushrooms. But all these types of mushrooms are not edible. As we discussed earlier, there are several types of mushrooms, some of which are poisonous and some of which are edible [10]. If we do not have enough knowledge of mushrooms and eat the wrong type of mushroom, which is poisonous, even our deaths can occur [11].

Of fourteen thousand species, only two thousand species of mushrooms are edible. Nowadays, people start the production of mushrooms by cutting down some plants, and some of them try producing with seeds [12]. The development of mushrooms mostly depends on the type of species. Some mushrooms grow faster, and some of them take some time to grow [13]. Mushrooms are used in different areas as a special food, and people like them most [14]. They contain 89% moisture, 71% carbohydrates, 35% protein, 9% fat, and 11% minerals. Mushrooms also contain vitamins and nucleic acids [15]. Different types of minerals like iron, zinc, magnesium, calcium, and selenium are present in mushrooms. After lots of experiments and research, we are able to name it a healthy nutritional food source [16]. They also have anti-viral, anti-oxidant, and anti-inflammatory properties. After doing lots of research on mushrooms, nutritionists declared

them a healthy food source and a preventer of different harmful diseases [17]. It helps to promote the value of mushrooms and give people knowledge about their positive effects [18].

We should raise awareness about the medical value of mushrooms, which can even treat cancer and many other diseases. Many elements—proteins, enzymes, lipids, steroids, etc.—were invented from mushrooms, showing their healthy value [19]. It is called an anti-viral agent because it works against viruses of RNA and DNA. We are trying to show the nutritional and healthy value of mushrooms; it's linked with Biochemistry and many other medical solutions [20-21]. Chemical value of mushrooms: If we talk about the chemical composition of mushrooms, then first we will discuss the composition and use of different compounds, like phenolic compounds [26-45]. They are made up of a combination of hydroxyl groups and rings. The presence of phenolic acids, tannins, lignin, etc. It is linked with the presence of an anti-inflammatory response. In several studies, it has been proven that these phenolic compounds have radicals and decompose peroxide. It helps prevent the signs of aging and heart problems. Its properties help to prevent cancer germs from entering the body and also help to treat cancer [22]. It works as an inhibitor of cancer cells. Mushrooms, which are edible, don't have fatty acids, which helps prevent diseases or problems related to the heart. It also prevents heart attacks or heart failure in humans [23]. It also releases some antioxidants, which help protect the heart from different problems like pain, heart attacks, vein blockage, etc. Different types of acids related to phenolic compounds show lots of properties that are beneficial for human health [24]. Mostly, we eat eight types of mushrooms.

METHODOLOGY:

Nutritional values of mushrooms: Mushrooms are well known for their nutritional value and use as a main source of food worldwide. People like its texture, composition, taste, flavors, and shape too. It also has a good rank in the medical field

and shows strong attributes towards health. It is a big source of nutrition and helps to get rid of many medical issues. If we talk about the composition of mushrooms, they have about ninety percent water and only ten percent dry matter. Its composition attracts attention to its high nutritional value. Mushrooms have a high amount of proteins, vitamins, minerals, and fibers in them. The quantity of fat in mushrooms is very low. Mushrooms contain all nine amino acids, which are essential for human health. It is very easy to digest and also helps to make our muscles stronger. Another important point is that it contains vitamin D. Mostly, other foods don't have this vitamin in them, but mushrooms have vitamin D, which helps make our body and bones strong. Mushrooms are high in nutrition, but they also have fewer calories and fats. The cholesterol level in mushrooms is also very low. Na⁺ and gluten levels are also very low in the mushrooms, so they are good for heart patients. Their nutritional value and health benefits make them more effective as a good source of food. Sometimes, their nutritional value also varies with the soil where they grow and how they harvest. Now, as the world is progressing day by day, people are learning about the value of mushrooms. The consumption of mushrooms is increasing day by day because of their extra delicious taste, flavor, and nutrition. They are now educated about its health benefits and medical importance. Most mushrooms contain water (about 90%), and only 10% contain dry matter. Proteins: The value of protein in mushrooms is also very high and plays an important role in their nutritional value, but it varies with development. The percentage of protein in mushrooms changes with the environment in which they grow, the type of soil, and different stages in their development. Mushrooms are considered a high-protein source because they contain about 251g of protein per kg. Amino acids also have positive and negative aspects. Lipids: As we have discussed, mushrooms have very low calories (only 6% fat) and also have no cholesterol. Different types of acids are included in fatty acids, which help

decrease the percentage of lipids in mushrooms. Carbohydrates: Carbohydrates are present in huge amounts in mushrooms that are edible. They also contain fructose, sucrose, and glucose. The cap and stem of mushrooms are also very nutritious. It contains fibers in soluble and insoluble forms. Vitamins: Vitamins including B, C, and E with different properties are present in mushrooms. Vitamin D is also present in mushrooms, as other food sources mostly don't have vitamin D in them. Some vitamins are present in large amounts, and some of them show a lower percentage.

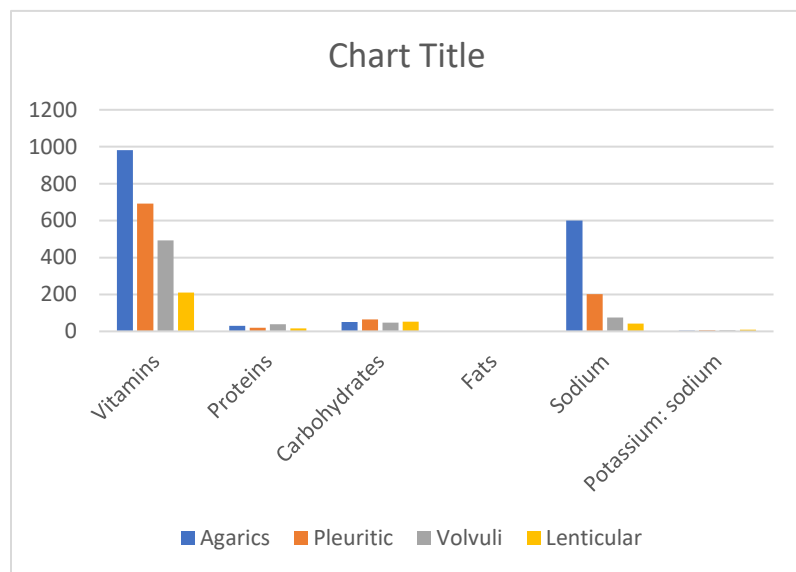
RESULTS:

Mushrooms, which we can easily eat without any poisonous effects, are showing very healthy benefits for human health. Some special types of chemicals related to biochemistry are helping them improve the health of human beings in different ways. Many types of proteins, amino acids, polysaccharides, and steroids are great sources of a strong immune system. It helps to boost health conditions and decrease the risk of cancer cells in the body. It helps to inhibit any type of cancer from forming in the body. As it has low fats and no cholesterol, it is good for diabetics and heart patients. Research on mushrooms and their benefits is increasing because mushrooms themselves are a great source of nutrition. It helps to prevent many diseases, including heart disease and cancer. Mushrooms are also a great source of antibacterial. It helps prevent bacteria and viruses, which have harmful effects on human health. Some special pathogens have also evolved that show some signs of serious diseases occurring in humans. Mushrooms help to kill different microorganisms that cause diseases in the body. Another study showed that mushrooms have the ability to kill cancer cells. It helps to prevent and kill cancer cells in the liver, breast cancer, pancreas, and uterus. It contains trapezoids, which help kill cancer cells and also inhibit their growth. Another anti-cancer drug is present, which helps prevent breast cancer. We notice that the use of mushrooms helps to kill

cancer cells in the liver and also inhibits their further growth. Glucans are also present in it, either alpha or beta; both help prevent cancer in

the body. It helps lower the level of cholesterol in the body and makes our immune system strong to fight this harmful disease.

Table 1 shows the nutritional value of mushrooms.



Nutritional value	Agarics	Pleuritic	Volvuli	Lenticular
Vitamins	982	692	493	210
Proteins	30.0	20.1	39.5	15.6
Carbohydrates	50.2	64.2	46.6	52.7
Fats	1.4	1.34	0.63	1.46
Sodium	600	202	75.3	42.6
Potassium: sodium	85:32	128:2	120:1	226:3

Table 2 shows the mushrooms and it's medicinal use.

Mushrooms	Compounds	Medicinal properties	Authors
Lyophilic	A novel fibrinolysis enzyme; a-chymotrypsin	Blood anticoagulant	[35]

Lentinula eddoes	Polysaccharides	Antioxidant	[56]
Phallus infuriates	A beta-D-glucan called T-5-N	Anti-inflammatory properties Antioxidant capability	[48] [49]
Pleuritic stratus	Lovastatin; inhibitor of 3-hydroxyl 3-methylglutaryl coenzyme A- reductase Oyster mushroom concentrate	Reduction of cholesterol Anti-inflammatory activity	[47] [48]
Pleuritic eryngo	Acidic glycosphingolipids Glycoprotein HEG- 5	Anti-tumor response; immune system betterment; antibacterial and Hem agglutination activity	[61] [52]
Heridium erinaceous	Polysaccharides (HEPs) Glycoprotein HEG- 5	Antibacterial activity against helicon-bacteria Anticancer potential against cancer	[53] [54]
Crucible leave	A new slaframine- type metabolites (DSM 1653 and DSM 8519)	Inhibit the enzyme aldose reductase	[55]
Lyophilic shimeji	A novel fibrinolysis enzyme; a- chymotrypsin	Blood anticoagulant agents	[46]
Agarics	Gallic acid, protocatechuic acid, Caffey acid, ferules acid and muricin	Antioxidant activity Immune system motivator Cancer inhibitor	[54] [57] [58]

Hymnal pecky	(2,5 hydroxyl- 3,6- bias (4-hydroxyphenyl)-1,4- anticoagulant	Anticoagulant and Antibacterial activity	[59] [60]
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DISCUSSION:

Mushrooms, which we can eat without any harmful effects, also contain biological properties [25]. Some modulatory activities can be seen in this field. If we discuss mushrooms with respect to biological responses, these glucans alpha and beta are involved in the treatment of cancer [26]. Mostly, beta glucans help to prevent and kill tumors in the body and make our immune system strong. Biological responses show immunological and modulatory effects that help initiate and generate natural cells to kill tumor cells [27]. These beta cells help to kill and inhibit cancerous cells in the body. About 8 of the mushrooms show results of working as anti-cancer cells. Polysaccharides are present in mushrooms in huge amounts and work as antioxidants [28]. Antioxidants are present mostly in the upper portion of the mushroom but not in the stem. Mushrooms have sterol compounds in them that inhibit the oxidation done by themselves [29]. Vitamin D is also generated by mushrooms but not by other food plants. Mushrooms are a huge source of protein, lipids, minerals, amino acids, and many other nutrients [30].

CONCLUSION:

Mushrooms are a high source of nutrients, which help to maintain good health and treat lots of diseases. It also serves a medicinal purpose. It is rich in nutrients, including protein, lipids, carbohydrates, vitamins, minerals, etc. There are several properties in mushrooms, like anti-viral, anti-bacterial, anti-inflammatory, anti-oxidant, and much more. All these properties help to treat various diseases and give nutrients to our bodies after consuming mushrooms. Ingredients present in mushrooms have lots of benefits for human health. As we discuss its properties and health

benefits, we are not sure how quantity of mushrooms should be consumed. On the other hand, as the benefits of consuming mushrooms increase day by day, the harvesting of mushrooms will increase and play a leading role. As mushrooms have a high level of nutrients, in the coming days, mushrooms will be at the top of all dishes with health benefits. As it treats different diseases and helps to make human health much better, in the future it will have more value. It will be cultivated on a large scale, and its scope will rapidly increase in the coming years.

Data Availability:

The type of data that is used to find different values and reviews is included in this study. Consent: Consent is not applicable.

Conflicts of interest:

The Author does not have any conflicts of interest.

Contributions by the Author:

All the search materials, procedures, different processes, scripting, and communication with others are also included in the contributions.

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