



## NUTRITIONAL PROFILE AND SOME HEALTH BENEFITS OF MUSHROOM

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### Introduction

Mushrooms contain some of the most potent natural medicines on the planet. About 100 species of mushrooms are being studied for their health-promoting benefits. Of those hundred, about a half dozen really stand out for their ability to deliver a tremendous boost to your immune system. It's important to eat only organically grown mushrooms because they absorb and concentrate whatever they grow in good or bad. Mushrooms are known to concentrate heavy metals, as well as air and water pollutants, so healthy growing conditions is a critical factor

Mushrooms, the fruiting bodies of macroscopic filamentous fungi that grow above the ground, have been a part of the human diet and used as both food and medicine for centuries. Mushrooms have been valued throughout the world as both food and medicine for thousands of years. They are a rich source of nutrition and form a major chunk of health foods. Fats occur in mushrooms in minor amounts, especially compared with protein and carbohydrates, and the fatty fraction consists predominantly of unsaturated fatty acids such as linoleic acid, they may be the perfect food for maintaining a healthy heart and cardiovascular system. (Borcher *et al.*, 2008) Earlier Mushroom eating was restricted to specific regions and areas of the world but due to globalization, interaction between different cultures, growing consumerism has ensured the accessibility of Mushrooms in all areas. They have created a space in a common mans kitchen. Also, current trend of consumption conveys the opportunity that lies in the area of mushroom exports.

Mushrooms, though classified as vegetables in the food world, are not technically plants. They belong to the fungi kingdom and although they are not vegetables, mushrooms provide several important nutrients.

**Major differences that distinguish fungi from both plants and animals include the following:**

- Plants have chlorophyll and make their own food through photosynthesis.
- Animals ingest their food.
- Fungi, lacking chlorophyll, exist on decaying material in nature and on substrate of various compositions when commercially grown.

In addition, fungi contain chitin, a polysaccharide derivative of glucose also found in the exoskeleton of crustaceans and insects, not cellulose found in plants, and contain the unique sterol, ergosterol, rather than cholesterol found in mammalian cells.

**Adding Mushrooms Is a Simple Way to Boost Your Health through Your Diet**

Mushrooms as little powerhouses of potent nutrition. They're an excellent addition to any salad and go great with all kinds of meat and fish. "Let food be the medicine" is good advice indeed, and with mushrooms that is especially true, as they contain some of the most powerful natural medicines on the planet.

Many edible mushrooms, such as Reishi, Maitake, Shiitake, Yama-bushitake, etc., are used in Japan and China to develop not only food materials but also medicines. These mushrooms can be used as highly functional food materials in dishes, concentrates, extracts, liquor, and powdered mushrooms or mycelia. In medicines, three kinds of carcinostatic polysaccharide drugs, such as immunopotentiators (BRM, biological response modifiers), have been developed in Japan. (Carlile *et al.*, 1980)

(a) "Lentinan" from the fruiting bodies of Shiitake

(b) "Krestin" (PSK) from the cultured mycelia of Kawaratake

(c) "Schizophyllan" (Sonifilan) from the cultured broth products of Suehirotake

### **Nutritional profile of mushrooms**

Mushrooms are naturally low in sodium, fat, cholesterol, and calories and have often been referred to as "functional foods." In addition to providing basic nutrition, they help prevent chronic disease due to the presence of antioxidants and beneficial dietary fibers such as chitin and beta-glucans. Mushrooms are rich in B vitamins such as riboflavin, folate, thiamine, pantothenic acid, and niacin. They are also the only vegan, non-fortified dietary source of vitamin D. Mushrooms also provide several minerals that may be difficult to obtain in the diet, such as selenium, potassium, copper, iron, and phosphorus. (Nutritional benefits, 2014)

Beta-glucans are a type of fiber that is found in the cell walls of many types of mushrooms. Recently, beta-glucans have been the subject of extensive studies that have examined their role in improving insulin resistance and blood cholesterol levels, lowering the risk of obesity and providing an immunity boost. Mushrooms also contain choline; an important nutrient found that helps with sleep, muscle movement, learning and memory. Choline assists in maintaining the structure of cellular membranes, aids in the transmission of nerve impulses, supports proper fat absorption and reduces chronic inflammation. (Roupas *et al.*, 2012)

### **Many Health Benefits of Mushrooms**

Countless studies have suggested that increasing consumption of naturally-grown foods like mushrooms decreases the risk of obesity and overall mortality, diabetes, heart disease and promotes a healthy complexion and hair, increased energy, and overall lower weight. (USDA National Nutrient Database, 2014)

#### **1. Weight management:**

It is found that substituting red meat with white button mushrooms can help enhance weight loss. Dietary fiber plays an important role in weight management by functioning as a "bulking agent" in the digestive system. Mushrooms contain two types of dietary fibers in their cell walls (beta-glucans and chitin) which increase satiety and reduce appetite, making you feel fuller longer and thereby lowering your overall calorie intake. (Dikeman *et al.*, 2015)

#### **2. Improved nutrition:-**

Mushroom consumption was associated with better diet quality and improved nutrition. Increasing vitamin D levels through mushroom diet. Consuming dried white button mushroom extract found to be as effective as taking supplemental vitamin D2 or D3 for increasing vitamin D levels (25-hydroxyvitamin D). The vitamin D in mushrooms has also been shown to inhibit the growth of cancer cells by contributing to the regulation of the cell growth cycle. The folate in mushrooms plays an important role in DNA synthesis and repair, thus preventing the formation of cancer cells from mutations in the DNA. (Mile *et al.*, 2004)

3. Improved immune system function:-

Long chain polysaccharides, particularly alpha and beta glucan molecules, are primarily responsible for the mushrooms' beneficial effect on immune system. In one study, adding one or two servings of dried shiitake mushrooms was found to have a beneficial, modulating effect on immune system function (Weigand-Heller *et al.*, 2012). Selenium has also been found to improve immune response to infection by stimulating production of killer T-cells. The beta-glucan fibers found in the cell walls of mushrooms stimulate the immune system to fight cancer cells and prevent tumors from forming. (o'neil *et al.*, 2013)

4. Cancer control:-

Mushrooms contain just as high an antioxidant capacity as carrots, tomatoes, green and red peppers, pumpkins, green beans, and zucchini. Selenium is a mineral that is not present in most fruits and vegetables but can be found in mushrooms. It plays a role in liver enzyme function, and helps detoxify some cancer-causing compounds in the body. Additionally, selenium prevents inflammation and also decreases tumor growth rates. (Mile *et al.*, 2004)

5. Diabetes control:-

Studies have shown that type 1 diabetics who consume high-fiber diets have lower blood glucose levels and type 2 diabetics may have improved blood sugar, lipids and insulin levels. One cup of grilled portabella mushrooms and one cup of stir-fried shiitake mushrooms both provide about 3 grams of fiber. (Diekeman *et al.*, 2005)

6. Heart health :-

The fiber, potassium and vitamin C content in mushrooms all contribute to cardiovascular health. Potassium and sodium work together in the body to help regulate blood pressure. Consuming mushrooms, which are high in potassium and low in sodium helps to lower blood pressure and decrease the risk of high blood pressure and cardiovascular diseases. (Diekeman *et al.*, 2005)

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