








Versatility In Varieties

White button mushrooms are by far the most popular mushroom variety, representing 90 percent of mushrooms consumed in the United States. Have you ever run into a shopper that claims to dislike white button mushrooms? Well, what if you had another whole arsenal of mushrooms you could recommend, all with unique taste profiles and culinary applications?

Get To Know Your ‘Shrooms

Type	Appearance	Taste	Culinary Use	Nutrition
White Button 	Classic appearance with a short, thick stalk and a white cap.	Fairly mild; blends well with most flavors. Flavor intensifies when cooked.	Try them raw on salads, or sautéed or roasted for pasta, pizza, and mains. Blend well with chicken, turkey or pork.	One serving (5 medium mushrooms) are an excellent source of the B vitamins riboflavin (28%), niacin (20%), pantothenic acid (27%) and copper (32%) ¹ and contain 2.8mg of ergothioneine ² .
Crimini (also known as baby ‘bellas or browns) 	Similar in appearance to whites but have a light-tan to rich-brown cap and a firmer texture.	Deeper, earthier, heartier flavor than whites buttons.	Full-bodied taste makes them the perfect addition to beef, wild game and vegetable dishes. Blends well with ground beef.	Four crimini mushrooms (one serving) is an excellent source of copper (44%), selenium (38%) and B vitamins riboflavin (30%) and pantothenic acid (27%) ¹ , and contain 4.9mg of ergothioneine ² .
Portabella 	A larger relative of criminis, portabellas have tan or brown caps and measure up to six inches in diameter.	Deep, meat-like flavor and texture.	Can be grilled, broiled or roasted and served as an appetizer, entrée or side dish. A flavorful vegetarian alternative, can grill and serve as “burgers”. Blends well with ground beef.	One piece of a whole portabella is an excellent source of copper (27%), selenium (28%) and niacin (24%) ¹ , and contain 4.3mg of ergothioneine ² .

Type	Appearance	Taste	Culinary Use	Nutrition
Maitake 	A wild, rippling, feathery look with fan-like caps.	Rich, woodsy taste.	Grill or broil maitake mushrooms as high heat develops their characteristic flavor.	One serving (1 cup diced) of maitake mushrooms offers nearly a full day's recommended allowance of vitamin D (99%) and is an excellent source of copper (20%) and niacin (29%) ¹ .
Shiitake 	Tan to dark brown in color, have broad, umbrella-shaped caps, wide open veils, tan gills, and curved stems that should be removed.	Meaty texture and are rich in umami and woodsy flavors when cooked.	Add a meaty flavor and texture to soups, sides, stir-fries, and entrees. Use shiitakes in any recipes calling for mushrooms, but they especially work well when paired with Asian-inspired flavors.	Four whole raw shiitake mushrooms are a good source of riboflavin (13%) and copper (12%), but when you turn up the heat and consume them cooked copper goes up 72% and pantothenic acid and selenium go up to 52% and 33%, respectively ¹ .
Enoki 	Tiny, button-shaped caps and long, spindly stems.	Mild tasting and crunchy.	Try them raw in salads and sandwiches. Or, use them as an ingredient in soups, such as a stock made with soy sauce and tofu.	One serving (17 large enoki mushrooms) are an excellent source of B vitamins niacin (37%) and pantothenic acid (23%) as well as a good source of riboflavin (13%) and folate (10%).
Oyster 	Can be gray, pale yellow, or even blue, with a soft, velvety texture.	Very delicate flavor.	Delicate and tender, oyster mushrooms cook very quickly, making them a great option for quick meals like stir-frys, and simple soups.	A single serving of six small oyster mushrooms are an excellent source of B vitamins riboflavin (24%), pantothenic acid (23%) and niacin (28%) ¹ .

1. U.S. Department of Agriculture, Agricultural Research Service. FoodData Central, 2019. fdc.nal.usda.gov. 2. Dubost, N.J., et al. (2006). Identification and quantification of ergothioneine in cultivated mushrooms by liquid chromatography-mass spectroscopy. International Journal of Medicinal Mushrooms, 2006. 8;3. pg 221. Table 3.

The Nutrition Facts

White Mushrooms

Nutrition Facts	
1 serving Serving size 5 medium mushrooms (90g)	
Amount per serving	
Calories	20
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	0%
Cholesterol 0mg	0%
Sodium 5mg	0%
Total Carbohydrate 3g	0%
Dietary Fiber 1g	4%
Total Sugars 2g	
Includes 0g Added Sugars	0%
Protein 3g	
Vitamin D 0.18mcg	1%
Calcium 3mg	0%
Iron 0.45mg	3%
Potassium 286mg	6%
Copper 0.285mg	32%
Selenium 8.35mg	15%
Riboflavin (B-2) 0.36mg	28%
Pantothenic Acid (B-5) 1.345mg	27%
Niacin (B-3) 3.245mg	20%
*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	

Crimini Mushrooms

Nutrition Facts	
1 serving Serving size 4 crimini mushrooms (80g)	
Amount per serving	
Calories	18
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	0%
Cholesterol 0mg	0%
Sodium 5mg	0%
Total Carbohydrate 3g	0%
Dietary Fiber 0.48g	2%
Total Sugars 1g	
Includes 0g Added Sugars	0%
Protein 2g	
Vitamin D 0.08mcg	0%
Calcium 14.4mg	1%
Iron 0.32mg	2%
Potassium 358mg	8%
Copper 0.4mg	44%
Selenium 20.8mcg	38%
Riboflavin (B-2) 0.392mg	30%
Pantothenic Acid (B-5) 1.2mg	24%
Niacin (B-3) 3.04mg	19%
*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	

Portabella Mushrooms

Nutrition Facts	
1 serving Serving size 1 piece whole portabella mushroom (84g)	
Amount per serving	
Calories	19
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 8mg	0%
Total Carbohydrate 3g	0%
Dietary Fiber 1g	4%
Total Sugars 2g	
Includes 0g Added Sugars	0%
Protein 2g	
Vitamin D 0.252mcg	1%
Calcium 3mg	0%
Iron 0.26mg	1%
Potassium 306mg	7%
Copper 0.24mg	27%
Selenium 15.6mcg	28%
Pantothenic Acid (B-5) 0.958mg	19%
Niacin (B-3) 3.78mg	24%
*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	

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Enoki Mushrooms

Nutrition Facts

1 serving

Serving size 17 large enoki mushrooms (85g)

Amount per serving

Calories **31**

% Daily Value*

Total Fat 0g **0%**

Saturated Fat 0g **0%**

Trans Fat 0g

Cholesterol 0mg **0%**

Sodium 3mg **0%**

Total Carbohydrate 7g **2%**

Dietary Fiber 2g **8%**

Total Sugars 0g

Includes 0g Added Sugars **0%**

Protein 2g

Vitamin D 0.085 mcg **0%**

Calcium 0mg **0%**

Iron 1mg **5%**

Potassium 306mg **7%**

Riboflavin (B-2) 0.17mg **13%**

Folate (B-9) 41mcg **10%**

Thiamin (B-1) 0.187mg **16%**

Pantothenic Acid (B-5) 1.16mg **23%**

Niacin (B-3) 6mg **37%**

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Shiitake Mushrooms

Nutrition Facts

1 serving

Serving size 4 whole shiitake mushrooms (76g)

Amount per serving

Calories **26**

% Daily Value*

Total Fat 0g **0%**

Saturated Fat 0g **0%**

Trans Fat 0g

Cholesterol 0mg **0%**

Sodium 7mg **0%**

Total Carbohydrate 5g **2%**

Dietary Fiber 2g **8%**

Total Sugars 2g

Includes 0g Added Sugars **0%**

Protein 2g

Vitamin D 0.304mcg **2%**

Calcium 2mg **0%**

Iron 0.3mg **2%**

Potassium 231mg **5%**

Copper 0.108mg **12%**

Riboflavin (B-2) 0.164mg **13%**

Pantothenic Acid (B-5) 1.14mg **23%**

Niacin (B-3) 3mg **18%**

Vitamin B6 0.224mg **13%**

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Oyster Mushrooms

Nutrition Facts

1 serving

Serving size 6 small oyster mushrooms (90g)

Amount per serving

Calories **30**

% Daily Value*

Total Fat 0g **0%**

Saturated Fat 0g **0%**

Trans Fat 0g

Cholesterol 0mg **0%**

Sodium 16mg **1%**

Total Carbohydrate 5g **2%**

Dietary Fiber 2g **8%**

Total Sugars 1g

Includes 0g Added Sugars **0%**

Protein 3g

Vitamin D 0.63mcg **3%**

Calcium 3mg **0%**

Iron 1.19mg **7%**

Potassium 378mg **8%**

Copper 0.222mg **25%**

Riboflavin (B-2) 0.312mg **24%**

Folate (B-9) 34mcg **9%**

Thiamin (B-1) 0.114mg **10%**

Pantothenic Acid (B-5) 1.16mg **23%**

Niacin (B-3) 4mg **28%**

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

What's a Serving of Mushrooms?



5 medium white (button) mushrooms (90g)



1 cup brown (Crimini) mushrooms (80g)



1 whole portabella mushroom (84g)



6 oyster mushrooms (90g)



4 shiitake mushrooms (76g)

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MUSHROOMS

Nutrition At A Glance

0 grams of cholesterol

0 grams of fat

More than 12 vitamins and minerals¹

Up to 4.9mg of the antioxidant ergothioneine²

excellent source of 3 different B vitamins⁴

8X

the amount of **vitamin D** in in fortified milk

(5 medium white mushrooms, exposed to UV light, **23.6mcg** vs. 1 cup nonfat milk with added vitamins A and D, **2.94mcg**)

More

selenium than any other fruit or vegetable¹

More

potassium per serving than tomatoes¹

(4 crimini mushrooms, **358mg** vs. 1 whole red, raw tomato **237mg**)

Combine

mushrooms with meat to **reduce sodium by 25%** while still maintaining flavor³

Mushroom Nutrition Download

One whole portabella mushroom, exposed to UV light contains
23.9mcg | 120% DV

Vitamin D

Maintains and supports strong bones by helping the body absorb calcium.⁴

Four crimini mushrooms contain
20.8mcg | 38% DV⁴

Selenium

Antioxidant that protects cells from damage that may lead to serious chronic diseases.⁵

2.8-4.9mg⁵

Ergothioneine

A naturally occurring antioxidant that may also help protect cells from damage and is known for its role in immunity.²

Five medium white mushrooms contain
286 mg | 6% DV¹

Potassium

Controls blood pressure and nerve and muscle function.⁵

B Vitamins

Provide energy and support metabolism.⁹

Five medium white mushrooms contain
1.345mg | 27% DV¹

Pantothenic Acid

Important for metabolism and production of hormones.⁶

Four crimini mushrooms contain
0.392mg | 30% DV¹

Riboflavin

Plays role in cellular function, energy production, growth and development, and metabolism.⁷

One whole portabella mushroom contains
3.78mg | 24% DV¹

Niacin

Promotes healthy skin and supports digestive and nervous system functions.⁸

Can Mushrooms Help You Lose More Weight?

With a similar texture to meat, mushrooms are hearty, filling, and satisfying, but unlike meat, mushrooms are a low-calorie, fat-free and cholesterol-free food, making them a great choice for those looking to manage their weight. Preliminary research suggests increasing intake of low-calorie, high-volume foods, specifically mushrooms, in place of high-calorie, low-volume foods, like ground beef, can be an effective method for reducing daily calorie and fat intake while still feeling full and satiated.¹⁰

The Trend Is To Blend

The Blend, combining meat with mushrooms, makes iconic recipes (burgers, meatloaf, tacos, meatballs) healthier without sacrificing taste or texture. In fact, data shows that combining meat with mushrooms actually improves the flavor and nutrition of your favorite recipes.³

The Blend is easy to make in just three simple steps:

1. **CHOP** up your favorite mushroom variety to match the consistency of the ground meat in the recipe.
2. **COOK** and season mushrooms the same way you would meat.
3. **COMBINE** the cooked meat and mushrooms and use the mix to complete your recipe.

1. U.S. Department of Agriculture, Agricultural Research Service. FoodData Central, 2019. fdc.nal.usda.gov. 2. Dubost, N.J., et al. (2006). Identification and quantification of ergothioneine in cultivated mushrooms by liquid chromatography-mass spectroscopy. International Journal of Medicinal Mushrooms, 2006. 8;3. pg 221. Table 3. 3. Miller, A.M., Mills, K., Wong, T., Drescher, G., et al. Flavor-Enhancing Properties of Mushrooms in Meat-Based Dishes in Which Sodium Has Been Reduced and Meat Has Been Partially Substituted with Mushrooms. Journal of Food Science (2014). Attached, substantiation underlined. 4. IOM (Institute of Medicine). 2010. Dietary Reference Intakes for Calcium and Vitamin D. Washington, DC, National Academies Press. Report Brief. Health Effects of Vitamin D and Calcium Intake, Page 1. 5. Duyff, R. Academy of Nutrition and Dietetics Complete Food and Nutrition Guide, Fifth Addition. Houghton Mifflin Harcourt. April 2017. 6. Pantothenic acid and biotin. Medline Plus. NIH U.S. National Library of Medicine. Reviewed July 9, 2019. Accessed February 3, 2020. 7. Riboflavin. Fact Sheet for Health Professionals. National Institutes of Health. Reviewed July 9, 2019. Accessed February 3, 2020. 8. Niacin. Medline Plus. NIH U.S. National Library of Medicine. Reviewed July 9, 2019. Accessed February 3, 2020. 9. What Are B-Vitamins and Folate? Academy of Nutrition and Dietetics. Reviewed July 9, 2019. Accessed February 3, 2020. 10. Cheskin LJ, Davis LM, Lipsky LM, Mitola AH, Lycan T, Mitchell V, Mickle B, Adkins E. Lack of energy compensation over 4 day

HOW MUSHROOMS GROW

MUSHROOMS ARE ONE OF THE MOST UNIQUELY GROWN FOODS IN THE SUPERMARKET. EVER WONDER WHAT IT TAKES TO GET THOSE MEATY, UMAMI-PACKED, NUTRITIOUS MUSHROOMS FROM THE FARM TO YOUR FORK?

MAKING THE MUSHROOM BED

Because mushrooms have no chlorophyll, they must get all their nutrients from the organic matter in their growing medium, the compost. Making mushroom compost involves wetting and mixing organic materials including corncobs, hay, straw, cottonseed and cocoa seed shells, and nitrogen supplements to initiate aerobic fermentation (composting), which lasts about 7-14 days. The compost is then made mushroom-ready by pasteurization and a highly controlled temperature-dependent process to remove any ammonia. The bed is now ready to use to help mushrooms grow!



SPAWNING

Just as a tomato comes from a plant with roots, stems and leaves, mushrooms arise from thin, thread-like cells called mycelium. In order to propagate the compost with “mushrooms’ roots”, growers use mushroom spawn (grain or seed that’s been inoculated with mushroom spores) to transfer the mycelium to the beds. The time needed for the spawn to colonize the compost varies but usually takes about 14-21 days.



CASING & PINNING

Casing, made of peat moss and limestone, is spread over the mushroom bed, acting as a reservoir to hold in moisture. Eventually, tiny white protrusions form on the mycelium and push up through the peat casing – a process which is referred to as pinning. The pins continue to grow into buttons and into larger mushrooms. Mushrooms are typically ready for harvest about 18 to 21 days after casing.



HARVESTING

Mushrooms are harvested by hand throughout a 16-35 day cycle. It takes about 15 weeks total to complete a growing cycle. After the mushrooms are harvested, the house is emptied and steam-sterilized before the process begins again and the remaining compost is recycled for potting soil. The harvested mushrooms are set in carts,

refrigerated and then packaged and shipped quickly to supermarkets, food processors and restaurants. The entire farm-to-fork process from the time the farmer starts preparing the compost until the mushrooms are harvested and shipped to market takes about four months.



MUSHROOM HISTORY & LORE



Kennett Square, PA, is considered the mushroom capital of the world since it produces the most fresh cultivated mushroom each year.

The largest living organism ever found is a honey mushroom that covers 3.4 square miles of land in the Blue Mountains of eastern Oregon and it is still growing.



The truffle, a type of mushroom that grows below the ground, is one of the world's most expensive foods. One variety, Tuber Melanosporum, can cost between \$800 and \$1,500 a pound.

The early Romans considered mushrooms “the food of the Gods.”



Some of the earliest commercial mushroom farms were actually set up in caves in France during the reign of King Louis XIV (1638-1715).

The English believe that mushrooms had to be gathered under a full moon to be edible.





NEW SCIENCE

Flavor-Enhancing Properties of Mushrooms

A new study from the Culinary Institute of America and University of California-Davis, published in the *Journal of Food Science*, explored the flavor-enhancing properties of mushrooms and found that blending finely chopped mushrooms with ground meat enhances flavor and nutrition.¹

Study Overview

The study, *Flavor-Enhancing Properties of Mushrooms in Meat-Based Dishes in Which Sodium Has Been Reduced and Meat Has Been Partially Substituted with Mushrooms*, conducted by University of California Davis (UC Davis) and the Culinary Institute of America (CIA) was published in the *Journal of Food Science*. Chef-instructors from the CIA developed eight test recipes, including recipes featuring The Blend™, adding finely chopped mushrooms to beef, and a CIA registered dietitian performed nutrition analyses on the recipe. Six beef taco blend recipes differing in added salt and meat/mushroom blend ratios and two carne asada recipes differing in meat/mushroom blend ratios were developed. The intensity of the sensory attributes of the mushroom preparations, taco blends, and carne asada recipes were evaluated by a trained panel of 13 judges using Quantitative Descriptive Analysis to determine the flavor effects of using a blend of chopped crimini and white button mushrooms and ground beef, as well as sensory mitigation of sodium reduction in the taco blends.

Key Study Findings

This proof-of-concept sensory study provides the basis for how mushrooms and meat can combine for healthier alternatives to iconic American dishes. As the study shows, a traditional ground meat recipe prepared with 50 percent mushrooms and 50 percent meat (or even 80 percent mushrooms and 20 percent meat) can:

- Reduce calorie, fat and sodium intake, while adding in B vitamins -- riboflavin (28%), niacin (20%) and pantothenic acid (27%).
- Enhance the overall flavor, because of double the impact of umami
- Maintain flavor while reducing sodium intake by 25 percent


Tips for Cooking Mushrooms

The study demonstrated that cooking methods have an effect on the flavor profile of white mushrooms.

- Sear mushrooms for a more intense roasted, charred and smoky flavor and overall aroma.
- Roast mushrooms to get more sweet, salty and umami tastes with caramelized, nutty and buttery flavors.

When cooked properly, mushrooms can take on the texture and consistency of meat. For the best blend results, mushrooms should be chopped to match the consistency of the meat they're pairing with.

- One Pan Cooking (great for tacos, sloppy Joes and pasta sauces): brown meat in a pan until cooked through, remove and set aside. Then, add chopped mushrooms to the same pan, sauté and return meat to the pan to complete the recipe.
- Create a Mushroom Base (ideal for burgers, meatballs and meatloaf): roast or sauté mushrooms ahead of time to intensify flavor and then finely chop to add to ground meat dishes.



MUSHROOMS

The Perfect Partner in a Gluten-Free Diet

What Is Gluten?

Gluten is a protein found in wheat and related grain species, including barley and rye. Gluten's particular amino acid sequences are of concern to the estimated 3 million people in the U.S. with diagnosed celiac disease¹.

Gluten in oats, corn and rice are less likely to be of concern.

Tests Have Shown That Mushrooms Are Gluten-Free

Nutrition can be confusing, with conflicting information in the news, including what it means to be gluten intolerant versus being diagnosed with celiac disease. Understanding what is gluten free and what isn't can also take research and time. Simply said, like all fruits and vegetables, mushrooms are naturally gluten free, and make a delicious and nutritious addition to a gluten free diet.

Mushrooms, just like any other vegetable, should be cleaned before consuming. If you see little specks on the surface of the mushroom simply rinse under cool water or wipe with a damp cloth.

Beyond Gluten-Free

Mushrooms are naturally free of gluten, sodium and cholesterol, and are also a source of some very important nutrients. Mushrooms are a source of B vitamins, including riboflavin, niacin, and pantothenic acid. These B vitamins help to provide energy by breaking down proteins, fats and carbohydrates².

Mushrooms are also a source of important minerals such as; selenium, a mineral that works as an antioxidant to protect body cells from damage². Many foods, of animal

origin and grains, are good sources of selenium, but mushrooms are among the richest sources of selenium in the produce aisle. Ergothioneine (2.8-4.9 mg) is another naturally occurring antioxidant that also may help protect the body's cells. Potassium (6%) is another important mineral many people do not get enough of. It aids in the maintenance of normal fluid and mineral balance, and can help control blood pressure².

Beta-glucans (long chain carbohydrates) found in numerous mushroom species*, have shown marked immunity-stimulating effects, may contribute to resistance against allergies and may also participate in physiological processes related to the metabolism of fats and sugars in the human body³.

Mushrooms exposed to the sun or UV light to naturally develop vitamin D, are the only source of vitamin D in the produce aisle and one of the few non-fortified food sources.

**“Enjoy a gluten-free diet that
includes mushrooms to help
maintain a healthy body.”**

* These beta-glucans are more prevalent in oysters, shiitake, and split gill mushrooms.



Manage Your Weight With Mushrooms

Managing Weight to Feel Your Best

Weight management is so much more than reaching a certain number on the scale. It's about your overall health and wellness – having energy, reducing risk of diseases like diabetes, cancer and heart disease¹, and feeling like the best version of yourself. It's great to have a goal in mind when losing weight but don't forget to account for other measures of success beyond the scale like how your clothes fit, your energy level and how you feel overall.

The 411 On Satiety

A key part to managing weight is getting your hunger in check. When insatiable hunger takes control, all good eating habits are thrown out the window and overeating can occur, which is why it's so important to choose foods and snacks that keep you satiated. A couple studies have shown that **mushrooms, when substituted for meat, can improve nutrition, enhance weight loss and promote satiety.**^{2,3}

A one-year, randomized clinical trial at Johns Hopkins Bloomberg School of Public Health indicates increasing

intake of low-energy-density foods (meaning few calories given the volume of food), specifically mushrooms, in place of high-energy-density foods, like lean ground beef, can be an effective method for reducing daily energy and fat intake while still feeling full and satiated after the meal. **Participants following the mushroom-rich diet lost seven pounds, showed improvements in body composition and maintained these changes for six months after losing weight.** Specifically, those in the intervention group reported lower calorie and fat intake; lost more pounds and percentage body weight; achieved lower body mass index, waist circumference and percent total body fat compared to participants on the control diet. The study also suggests that **substituting mushrooms for lean ground beef in an entrée just once every week would save almost 20,000 calories or more than 5 pounds of body weight in one year.**²

Another recent study conducted by University of California-Davis and the Culinary Institute of America found that substituting mushrooms for a portion of meat helped improve nutrition and flavor. **Adding mushrooms to the mix helped lower calorie, saturated fat and sodium intake, while adding nutrients to the plate like B vitamins, vitamin D, antioxidants and potassium (6%).**³

Food Pairings To Curb Hunger

Nutrient-dense meals and snacks that offer a combination of protein, good fat, and fiber have the most staying power to help keep cravings at bay.

Avocado +
Whole-Wheat Toast
+ Egg

Mushrooms +
Ground Turkey +
Whole-Wheat Bun +
Lettuce

Scrambled Eggs +
Mushrooms +
Parmesan Cheese

Apple + Peanut
Butter

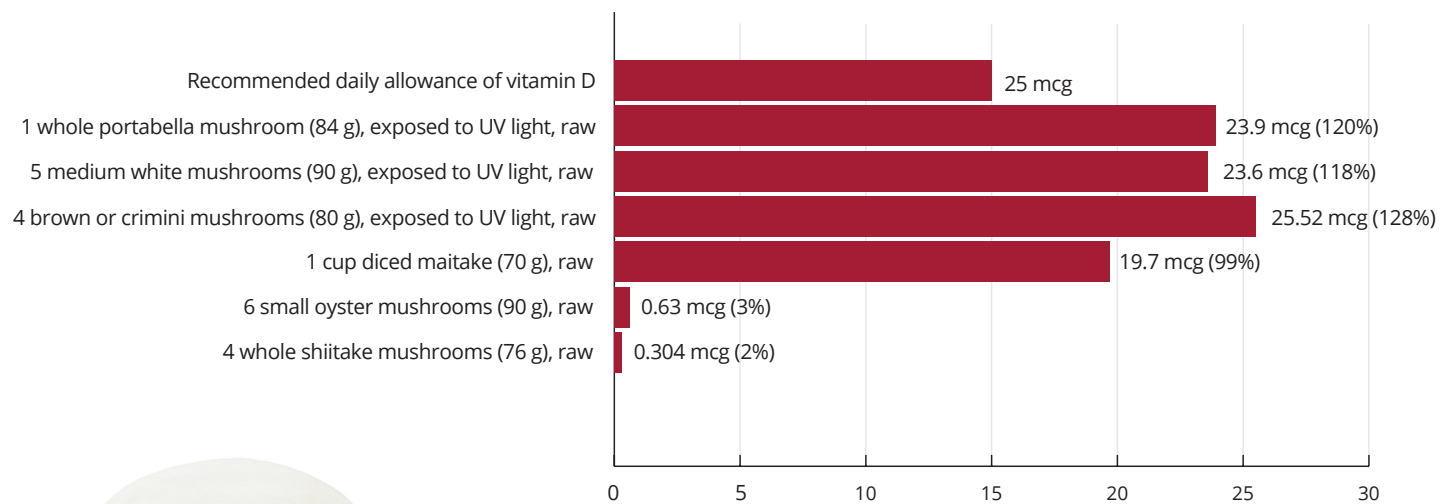
Hummus + Olives
+ Carrots

Vitamin D And Weight

Studies have consistently shown a correlation between low vitamin D levels and obesity.^{4,5} Few foods naturally contain vitamin D, but mushrooms are unique for being the only food in the produce aisle that contains vitamin D. In fact, the Institute of Medicine recognizes UV-exposed mushrooms as the exception to the rule that plant foods don't naturally contain vitamin D.

Although the results are not conclusive, some clinical trials have demonstrated that the **vitamin D2 present in mushrooms is bioavailable and is equally effective in raising and maintaining a healthy adult's vitamin D status as taking a supplement that contains vitamin D.** In fact, a 2012 study in Dermato-Endocrinology showed that 25 adults who consumed 50mcg of vitamin D2 from white button mushroom extract daily for a three-month period were able to raise and maintain their vitamin D (25(OH)) levels similar to healthy adults who consumed 50mcg of supplements containing vitamin D2 or D3.⁶

Vitamin D Levels in Mushroom Varieties



Data Source: U.S. Department of Agriculture, Agricultural Research Service. FoodData Central, 2019. fdc.nal.usda.gov.



1. National Institutes of Health: National Heart, Lung, and Blood Institute. Aim for a Healthy Weight. 2. Cheskin LJ, Davis LM, Lipsky LM, Mitola AH, Lycan T, Mitchell V, Mickle B, Adkins E. Lack of energy compensation over 4 days when white button mushrooms are substituted for beef. *Appetite*. 2008;51:50-57. 3. Myrdal Miller, A., Mills, K., Wong, T., Drescher, G., Lee, S.M., Sirimuangmoon, C., Schaefer, S., Langstaff, S., Minor, B. and Guinard, J.-X. (2014), Flavor-Enhancing Properties of Mushrooms in Meat-Based Dishes in Which Sodium Has Been Reduced and Meat Has Been Partially Substituted with Mushrooms. *Journal of Food Science*, 79: S1795-S1804. 4. Wortsman, J., Mat-suoka, L., Chen, T., Lu, Z., Holick, M. Decreased Bioavailability of Vitamin D. *American Journal of Clinical Nutrition*. 2000. 72(3): 690-693. (Discussion. 1st sentence.) 5. Vanlint, Simon. Vitamin D and Obesity. Review. *Nutrients*. 2013, 5, 949-956. (Introduction, 2nd paragraph). 6. Raphael-John H. Keegan,1 Zhiren Lu,1 Jaimee M. Bogusz1 and Michael F. Holick. Photobiology of vitamin D in mushrooms and its bioavailability in humans. *Dermato-Endocrinology*. 2013. 5:1, 1-1. Page 175, 1st column, last paragraph, last sentence; Figure 8. 7. U.S. Department of Agriculture, Agricultural Research Service. FoodData Central, 2019. fdc.nal.usda.gov.