



MUSHROOMS

The Only Source of Vitamin D in the Produce Aisle

Few foods naturally contain vitamin D, but mushrooms are unique for being the only food in the produce aisle to contain the “sunshine vitamin.”

The sun is the most common producer of vitamin D, as the ultraviolet (UV) rays from sunlight strike the skin and trigger vitamin D synthesis. Mushroom farmers took note and began exposing their mushrooms to UV light during the growing process, increasing the overall vitamin D content.¹ Some varieties, such as crimini and portabella, contain higher levels of the plant sterol, ergosterol, which converts to vitamin D upon exposure to UV light and, in turn, results in a higher amount of vitamin D (see Table 2).

Why Vitamin D Is Important

Although the majority of Americans consume sufficient amounts of most nutrients, vitamin D is consumed by many individuals in amounts below the Estimated Average Requirement.² The 2015-2020 Dietary Guidelines for Americans identified vitamin D as a nutrient of public health concern because low intakes are associated with health concerns.² Vitamin D helps build and maintain strong bones by helping the body absorb calcium, therefore insufficient levels can lead to rickets in children and osteoporosis in adults.³

Table 1: Recommended Dietary Allowances (RDAs) for Vitamin D3

Age	Male	Female	Pregnancy	Lactation
0-12 months*	400 IU (10 mcg)	400 IU (10 mcg)		
1-13 years	600 IU (15 mcg)	600 IU (15 mcg)		
14-18 years	600 IU (15 mcg)	600 IU (15 mcg)	600 IU (15 mcg)	600 IU (15 mcg)
19-50 years	600 IU (15 mcg)	600 IU (15 mcg)	600 IU (15 mcg)	600 IU (15 mcg)
51-70 years	600 IU (15 mcg)	600 IU (15 mcg)		
> 70 years	800 IU (120 mcg)	800 IU (120 mcg)		

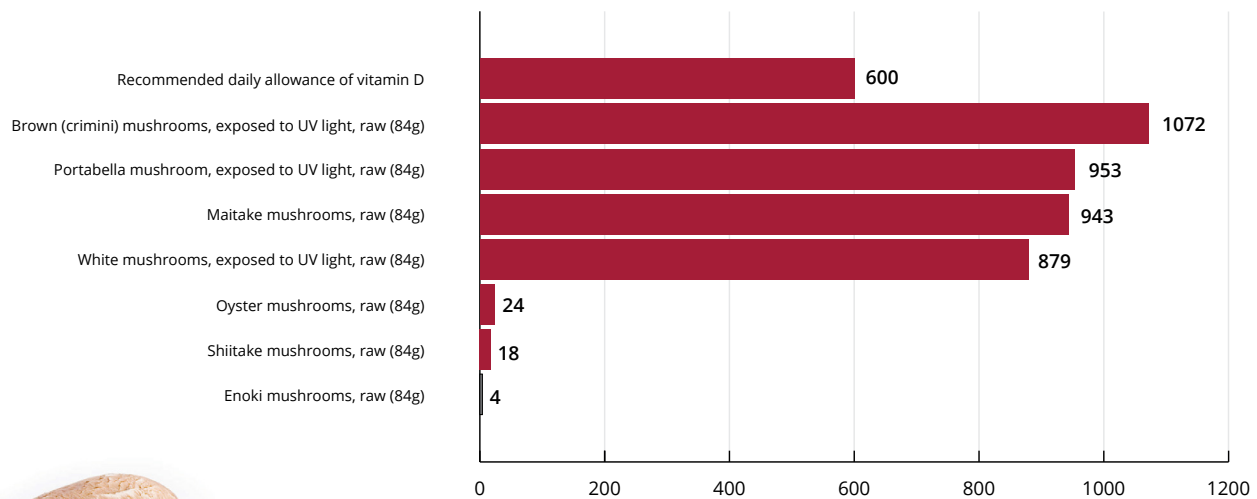
1. U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Americans, 2015. 8th Edition, Washington, DC: U.S. Government Printing Office, January 2016. 2. Vitamin D Fact Sheet for Health Professionals. National Institutes of Health: Office Of Dietary Supplements. Reviewed November 10, 2014. Introduction. 2nd paragraph. 3. 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, 1st paragraph; Table. 4. McHugh T. UV processing of mushrooms increases vitamin D content. Food Technology 3/15. Page 75, 3rd column, 2nd paragraph.

Mushrooms vs. Supplements

Some clinical trials have demonstrated that the vitamin D present in mushrooms is bioavailable and as equally as effective in raising and maintaining a healthy adult's vitamin D status as taking a supplement that contains vitamin D (although the results are not conclusive). In fact, a 2012 study in *Dermato-Endocrinology* showed that 25 adults who consumed 2,000 IU of vitamin D 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 2,000 IU of supplements containing vitamin D2 or D3.⁴

Table 2: Vitamin D IU** Levels in Mushroom Varieties⁵

Portabella, white, crimini and maitake are tops in vitamin D.



Source: US Department of Agriculture, Agricultural Research Service, Nutrient Data Laboratory. USDA National Nutrient Database for Standard Reference, Release 28. Version Current: September 2015, slightly revised May 2016. Internet: [nea/bhnrc/ndl](https://www.nndb.gov/)



** The IU is an International Unit, usually used to measure fat soluble vitamins including vitamins A, D and E. The conversion of IU to mg varies depending on the nutrient.

1. McHugh T. UV processing of mushrooms increases vitamin D content. *Food Technology* 3/15. Page 75, 3rd column, 2nd paragraph. 2. U.S. Department of Agriculture and U.S. Department of Health and Human Services. *Dietary Guidelines for Americans, 2015*. 8th Edition, Washington, DC: U.S. Government Printing Office, January 2016. 3. Institute of Medicine, Food and Nutrition Board. *Dietary Reference Intakes for Calcium and Vitamin D*. Washington, DC: National Academy Press, 2010. 4. 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. 5. US Department of Agriculture, Agricultural Research Service, Nutrient Data Laboratory. USDA National Nutrient Database for Standard Reference, Release 28 (Slightly revised). Version Current: May 2016.

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