MUSHROOMS A Natural Source of Vitamin D

DID YOU KNOW?

Did you know you could potentially increase vitamin D content in mushrooms at home? A recent study showed that vitamin D in sliced white button mushrooms spread on a reflective surface increased by as much as 25% of the Daily Reference Intake (DRI) or 150 IU per 70 gram serving in some cases by exposure to sunlight for as little as 15 minutes.

VITAMIN D REMAINS A NUTRIENT OF CONCERN

The 2015-2020 Dietary Guidelines for Americans identifies vitamin D as a "shortfall nutrient" because most Americans fall short on consumption compared to the Institute of Medicine's (IOM) recommendations for intake. It also named vitamin D a "nutrient of public health concern" because its underconsumption has been linked to poor health outcomes [1].

Vitamin D helps the body absorb calcium, making it an essential nutrient for bone health; insufficient levels can lead to rickets in children and osteoporosis in adults [2]. With sufficient research on the role vitamin D plays in bone growth and maintenance, the IOM changed its recommended intake level for vitamin D for children and adults (1-70 years old) from 200 IU to 600 IU – that's three times the original recommendation. The current recommendation for adults 70+ years is even higher at 800 IU[3].

MUSHROOMS AS A SOURCE OF VITAMIN D2

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 IOM recognizes UV-exposed mushrooms as the exception to the rule that plant foods don't naturally contain vitamin D. Some mushrooms contain higher levels of a plant sterol, ergosterol, which converts to vitamin D upon exposure to UV light.

Mushroom growers have the ability to increase vitamin D levels in mushrooms to a controlled amount by exposing them to ultraviolet (UV) light and several large mushroom suppliers now make mushrooms high in vitamin D available in grocery stores across the country[4]. UV-exposed portabella mushrooms found at the supermarket provide close to 400 IU vitamin D per serving (4-5 white button mushrooms or one portabella).

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

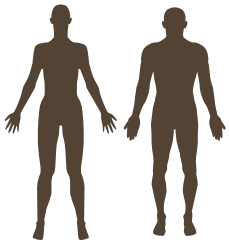
Although the results are not conclusive, some clinical trials have demonstrated that the vitamin D2 present in mushrooms is bioavailable and is equally effective in raising and maintaining a healthy adult's vitamin D status as taking a supplement that contains vitamin D. In fact, a 2012 study in *Dermato-Endocrinology*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

VITAMIN D WHITE AND CRIMINI MUSHROOMS NOW IN USDA NUTRIENT DATABASE

USDA's National Nutrient Database – the foundation of most food and nutrition databases in the U.S. – now includes white and crimini mushrooms exposed to UV light. One serving of raw, UV-exposed, white and crimini mushrooms contains 890 IU and 1086 IU of vitamin D, respectively [8].

VITAMIN D DOWNLOAD

VITAMIN D HELPS THE BODY ABSORB CALCIUM, MAKING IT AN ESSENTIAL NUTRIENT FOR BONE HEALTH; INSUFFICIENT LEVELS CAN LEAD TO RICKETS IN CHILDREN AND OSTEOPOROSIS IN ADULTS[2].



600 IU

CURRENT RECOMMENDED **VITAMIN D** INTAKE LEVEL FOR ADULTS[3]

3X

THE AMOUNT THE RECOMMENDATION WAS **INCREASED IN 2010**[3]

384 IU

AMOUNT ONE SERVING OF **UV-EXPOSED PORTABELLA MUSHROOMS** PROVIDES[7]

890 IU

AMOUNT ONE SERVING OF **UV-EXPOSED WHITE MUSHROOMS** PROVIDES[8]

1086 IU

AMOUNT ONE SERVING OF **UV-EXPOSED CRIMINI (BROWN) MUSHROOMS** PROVIDES[8]

5. Phillips KM and Rasor AS. A nutritionally meaningful increase in vitamin D in retail mushrooms is attainable by exposure to sunlight prior to consumption. J Nutr Food Sci. 2013; 3:236. Page 4, 2nd paragraph, 2nd column; Conclusion, 2nd sentence. 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. USDA National Nutrient Database for Standard Reference Release 27. UV Exposed Portabella Mushrooms. 8. Simon RR, Borzelleca JF, DeLuca HF and Weaver CM. Safety assessment of the post-harvest treatment of button mushrooms. Food and Chemical Toxicology 56 (2013). Bottom of page 286- top of pg 287. 8. USDA National Nutrient Database for Standard Reference Release 28. UV Exposed White and Brown Mushrooms.

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