The 'vitamin D mushroom' – a food-based solution to Australian adults' low vitamin D levels: new dietary modelling

Call for UV-exposed mushrooms to be considered as food source of vitamin D in pending revision to Australian Dietary Guidelines

New Australian dietary modelling research reveals just four 75g serves per week of store-bought mushrooms exposed to UV light (sun or lamp), or 'vitamin D mushrooms', can support Australian adults with exceeding their dietary vitamin D needs.[1]

Vitamin D deficiency is considered a serious public health issue in Australia.[1,2] **Nearly one in three (31%) Australians are vitamin D deficient, while more than 95% have an inadequate intake of vitamin D (<10 µg/day).**[1,3-5]

The current Australian Dietary Guidelines (ADG) fail to provide adequate vitamin D, reflecting the difficulty with meeting Australians' vitamin D needs. Dietary modelling used to inform these guidelines overlooked vitamin D mushrooms (UV-exposed mushrooms) as a potential solution to this shortfall in Australia.[1]

According to the author of this new research, Nutrition Scientist, Space Nutritionist and CEO of leading food and nutrition science translation group, FOODiQ Global, Dr Flávia Fayet-Moore, while vitamin D from food sources has traditionally played a minor role in addressing vitamin D deficiency, her team's new Australian research reveals vitamin D intake from UV-exposed mushrooms can contribute significant amounts of vitamin D, and offers a unique package of nutrients to the diet. Research shows foods rich in vitamin D improves levels in those with sub-optimal vitamin D status [on a national scale].[6]

"Concerningly, our national intake of vitamin D is among the world's lowest, with evidence suggesting data-driven nutrition policy is required to safely increase vitamin D intake, and improve vitamin D status at the population level,"[1,4] said Dr Fayet-Moore.

"In our recently published research, we modelled the effect of adding vitamin D mushrooms to the Aussie diet as part of the 'vegetables and legumes' core food group in the *Australian Guide to Healthy Eating*. We did this by removing mushrooms from the 'other vegetables' sub-category, and created a fifth 'mushrooms only' group. For the first time ever, vitamin D requirements were able to be met with food.[1,7]

"Our research revealed adding just four 75g serves per week of vitamin D mushrooms to the diet, enabled Australian adults to exceed their daily recommended vitamin D intake by between 28 – 87%,"[1] Dr Fayet-Moore said.

"This is because the vitamin D content of your everyday common UV-exposed mushroom (e.g. Button, Cup, Portobello), contains more than three-times the levels found in other dietary sources of vitamin D, including both oily fish and eggs [for which the animal has made the vitamin D] per serve;[1] can provide the same dose as a 1,000IU vitamin D supplement; and has been shown to be as effective as a vitamin D supplement in increasing levels in vitamin D deficient individuals.[8,9]

"Although frequently considered, and consumed as a vegetable, mushrooms belong to the fungi kingdom, giving them the unique ability to make vegan vitamin D when exposed to UV light," said Dr Fayet-Moore.

** Research used Institute of Medicine (IOM) targets, demonstrating just four 75g serves per week of vitamin D mushrooms exceeded the vitamin D needs of all Australian adults aged up to 70 years.*

"They have a unique nutritional profile, comprising of key nutrients found in vegetables (potassium and folate), and those found across other food groups (vitamin B3, B5, B7, phosphorus, copper, and selenium.[8]

"Mushrooms also offer a unique package of health-promoting bioactives, including beta-glucans, ergothioneine, glutathione, chitin and phytosterols,"[9,10] Dr Fayet-Moore said.

Importantly, current medical guidelines on vitamin D in Australia suggest sunlight is a key source of vitamin D.[1] However factors contributing to insufficient sun exposure include high concern for, and risk of, skin cancer, indoor lifestyles and skin colour.[1,11,12]

Furthermore, vitamin D levels vary considerably by season. Deficiency rates are much lower in summer (14%), and much higher in winter (36%), reinforcing the importance of food sources in addressing vitamin D deficiency in Australia.[3-5]

"Australian Mushroom Growers' Association (AMGA) is calling for the revised ADG (set for release in 2027) to consider mushrooms as important food-based solution in addressing the dietary vitamin D needs of Australians. This may also help to overcome some of the challenges seen in seasonal fluctuations in Australian adults' vitamin D levels," said AMGA Chief Executive Officer, Leah Bramich.

"Mushrooms are biologically distinct to both plants and animals and are rich in many micronutrients suited to all diet types."[8]

Vitamin D is also very important for intestinal absorption, use of calcium from foods, and for maintaining healthy bones – for bone development and strength.[9] In addition to the well-documented role played by vitamin D in bone health, associations also exist between vitamin D inadequacy, and increased susceptibility to infectious diseases, muscle weakness, multiple sclerosis, diabetes, hypertension, metabolic syndrome, cancers, autoimmune and cardiovascular diseases.[13-15]

"There has been a shift in Australians' awareness of, and attitudes toward, the burden of meat consumption on both the environment, and human health.[16] With almost two in five Australians (39%) reporting they are actively trying to reduce their meat consumption,[16] it is becoming more important now than ever, to recognise vitamin D mushrooms as a whole-food, and vegan source of vitamin D, aligned with global, plant-based food consumption trends,"[1] said Ms Bramich.

According to CEO and Founder of Australia's largest and only organic mushroom farm, Bulla Park, Victoria, and AMGA Director, Georgia Beattie, mushrooms are always in season, and unlike plants, do not require sunlight to grow, and can be sustainably farmed.[9]

"An important step towards more sustainable food systems is integrating broader sustainability issues into national food-based dietary guidelines, to promote the purchase, and consumption of more sustainable, healthy foods.[17]

"Mushrooms have a small environmental footprint, largely due to their role in circular agriculture, whereby outputs from other agricultural industries are used as inputs in mushroom compost production, to create a nutrient-rich substate for producing high-quality mushrooms," Ms Beattie said.

"Then, at the end of the growing process, the compost is recycled to other agricultural industries to produce more food.[1]

"With their low environmental impact, UV-exposed mushrooms support both nutrition and sustainability efforts, and evidently, warrant consideration as a key, and substantial dietary source of vitamin D,"[1] said Ms Beattie.

ABOUT THE DIETARY MODELLING STUDY

The dietary modelling used to inform the current ADG fails to consider the use of UV-exposed mushrooms as a source of vitamin D. New Australian dietary modelling research – *Mushrooms: a food-based solution to vitamin D deficiency to include in dietary guidelines*, recently published in Frontiers In Nutrition, found removing mushrooms from the 'other vegetables' sub-category of the 'vegetables and legumes' core food group [in the Australian Guide to Healthy Eating], and creating a fifth 'mushrooms only' sub-category of vegetables and legumes, resulted in Australians exceeding dietary vitamin D requirements.

The modelling was performed at the level of Foundation Diets (designed to meet the energy needs of the smallest and most inactive members of a demographic group), for two dietary patterns (omnivore and ovo-lacto vegetarian), and for three adult demographic groups (women 19-30 years; men 51-70 years; women over 70 years). Vitamin D requirements were based on the Institute of Medicine (IOM) Recommended Daily Allowance (RDA). Noting, recommended intakes for vitamin D vary worldwide. While the IOM recommends an estimated average requirement of 10 µg/day, and RDA up to 20 µg/day for adults aged over 70 years, Australian recommendations are based around adequate intake (AI), ranging from 5–15 µg/day depending on age group, with the highest requirements for those aged 65 years and older. In accordance with Australian targets, four 75g serves per week of store-bought mushrooms exposed to UV light (sun or lamp), or 'vitamin D mushrooms', can support **ALL** Australian adults with exceeding their vitamin D requirements.

While all baseline diets contained inadequate vitamin D levels, ranging from 10 to 31% of the IOM RDA across demographic groups, the addition of one serve per day (75 g) of UV exposed mushrooms enabled all demographic groups to exceed their recommended dietary vitamin D intake by 28 - 87%.

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Click on link to watch short video below featuring Dr Fayet-Moore urging nutritionists, dietitians & policy makers to consider vitamin D mushrooms in revision of the Australian Dietary Guidelines

Dr Flávia Fayet-Moore
Nutrition Scientist, Space Nutritionist &
CEO, FOODiQ Global

MEDIA INTERVIEWS & CONTACTS

To coordinate an interview with Dr Flávia Fayet-Moore, Leah Bramich and / or Georgia Beattie, please contact:

Kirsten Bruce & Melorin Kheradi, VIVA! Communications
W 02 9968 3741
M 0401 717 566 | 0421 551 257
E kirstenbruce@vivacommunications.com.au | mel@vivacommunications.com.au

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