



# MUSHROOMS AND HEALTH GLOBAL INITIATIVE BULLETIN

An ISMS Global Initiative to increase the worldwide consumption of mushrooms through the collection, evaluation and dissemination of scientifically validated information.

**MAY 2012 ISSUE #18**

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## Mushrooms get social

### Australia

[Power of Mushrooms website](#)

[My Mushrooms blog](#)

[Mighty Mushroom Twitter](#)

[Mushroom Lovers Club](#)

[Facebook](#)

[Power of Mushrooms YouTube](#)

### Canada

[Mushrooms Canada website](#)

[Mushrooms Canada blog](#)

[Mushrooms Canada Twitter](#)

[Mushrooms Canada Facebook](#)

[Mushrooms Canada Pinterest](#)

[Mushrooms Canada YouTube](#)

### Netherlands

[Champignonidee website](#)

[Champignonidee Twitter](#)

[Champignonidee Facebook](#)

[Champignonidee Pinterest](#)

[Champignonidee YouTube](#)

[Champignonidee Google+](#)

### Spain

[CTICH website](#)

[Champinonidea website](#)

[Asochamprioja Twitter](#)

[Asoc Prof Cultivadores](#)

[Champiñon de La Rioja,](#)

[Navarra y Aragon Facebook](#)

[Asochamprioja YouTube](#)

[ASOC.PROF.CULT Champiñón](#)

[DE LA RIOJA Google+](#)

### United Kingdom & Ireland

[More to Mushrooms website](#)

[More to Mushrooms Twitter](#)

[More to Mushrooms Facebook](#)

### United States

[Mushroom Info website](#)

[The Mushroom Channel blog](#)

[Mushroom Channel Twitter](#)

[Mushroom Channel Facebook](#)

[Fresh Mushrooms Pinterest](#)

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## News from the Initiative - Mary Jo Feeney

### ► Mushrooms get social

During a February conference call, members of the Initiative Team, Strategic Communications Group and other mushroom industry marketing and communications representatives discussed how to use social media to converse among our global partners and thus create a more unified message about the nutrition and health benefits of mushrooms.

Brittany Stager, Mushrooms Canada, prepared the following brief overview about social media and compiled the industry links in the side bar. Read how Mushrooms Canada uses social media in her article on page 4.

### ► What is social media and why use it? By Brittany Stager

Simply put, social media is people having conversations online, sharing insights, thoughts, experiences and perspectives. Social media defines various activities that integrate technology and social interaction using words, pictures, audio and videos.

Social media is used for several reasons; to build awareness, build customer relationships, create a community, create leads and to become an influential authority over a topic. The objective of social media, as a whole, is to **create a surround sound**, with all platforms working together to drive traffic to one another, thus increasing followers, likes, readers and authority. Mushroom growers, and their representative agencies around the world, would benefit from all of these outcomes through the use of social media.

## Mushroom Research

### ► Comparative effects of providing supplementary UV-B during the growth phase on vitamin D<sub>2</sub> formation

Kristensen HL, Rosenqvist E, and Jakobsen J. [Increase of vitamin D<sub>2</sub> by UV-B exposure during the growth phase of white button mushroom \(\*Agaricus bisporus\*\).](#)

*Food & Nutrition Research* 2012. 56: 7114 - DOI: 10.3402/fnr.v56i0.7114. This is an Open Access article. <http://www.foodandnutritionresearch.net/index.php/fnr/article/view/7114>.

This study appears to be the first to report the effects of providing supplementary UV-B during the growth phase on vitamin D<sub>2</sub> formation and the interactions with growth of mushrooms, as compared to supplementary UV-B during the post-harvest phase or exposure to sunlight for both cultivated and wild mushrooms.

Exposure to supplementary UV-B just prior to harvest was provided in the range of 0–2,400 mJ cm<sup>-2</sup>. Mushrooms grew for 2 days with or without repeated UV-B exposure each day. Vitamin D<sub>2</sub> and growth rate were determined. Some mushrooms were post-harvest treated by exposure at 200 mJ cm<sup>-2</sup> supplementary UV-B or natural sunlight, prior to vitamin D<sub>2</sub> determination.

Growth was unaffected by UV-B. Vitamin D<sub>2</sub> ranged from 0.2–164 µg 100 g<sup>-1</sup> fresh weight (FW). There was a linear relationship between UV-dose up to 1,000 mJ cm<sup>-2</sup> and vitamin D<sub>2</sub> content. The fast growth rate of the mushrooms diluted the vitamin D<sub>2</sub> from 24 to 3 µg 100 g<sup>-1</sup> within 2 days of exposure at 200 mJ cm<sup>-2</sup>. Following repeated UV-B exposure, vitamin D<sub>2</sub> increased to 33 µg vitamin D<sub>2</sub> 100 g<sup>-1</sup>.

Post-harvest exposure to supplementary UV-B resulted in a higher vitamin D<sub>2</sub> content of 32 µg 100 g<sup>-1</sup> compared to the 24 µg 100 g<sup>-1</sup> obtained from exposure to UV-B during the growth phase. In contrast, wild and cultivated mushrooms with and without exposure to sunlight had vitamin D<sub>2</sub> content in the range of 0.2–1.5 µg vitamin D<sub>2</sub> 100 g<sup>-1</sup>.

#### ► **Vitamin D<sub>2</sub> from light-exposed edible mushrooms supports bone growth in rats**

Calvo MS, Babu US, Garthoff LH, et al. [Vitamin D<sub>2</sub> from light-exposed edible mushrooms is safe, bioavailable and effectively supports bone growth in rats.](#) *Osteoporos Int.* 2012. Feb. 23 (E-pub ahead of print).

This study investigated the bioavailability, safety and efficacy of high levels of vitamin D<sub>2</sub> from mushrooms to support bone health in chronically fed growing rats. Female rats received one of five diets for 10 weeks, all formulated on AIN-93G. Control diets contained no mushrooms either with or without vitamin D<sub>3</sub>. Other diets contained 2.5% and 5.0% of UVB-exposed or -unexposed mushrooms. Safety of the high levels of vitamin D<sub>2</sub> from mushrooms was assessed by animal growth and by Von Kossa staining for soft tissue calcification. Bioavailability was determined from changes in circulating levels of 25-hydroxyvitamin D [25(OH)D] and parathyroid hormone (PTH). Measures of femur bending properties, size, mineralization and microarchitecture determined efficacy in support of bone growth.

According to the results, diets containing 2.5% and 5.0% light-exposed mushrooms significantly raised 25(OH)D and suppressed parathyroid hormone levels compared to control-fed rats or rats fed 5.0% mushroom unexposed to light. Microarchitecture and trabecular mineralization were only modestly higher in the light-treated mushroom-fed rats compared to the controls. Von Kossa staining revealed no soft tissue calcification despite very high plasma 25(OH)D.

UV-B exposure prior to harvest makes it possible to produce mushrooms with a well-defined content of vitamin D<sub>2</sub>.

Vitamin D<sub>2</sub> from UVB-exposed mushrooms is bioavailable and helps support bone health in a growing rat model without evidence of toxicity.

Waste mushroom compost has potential to boost fiber and lower the glycemic response in snack products.

### ► Potential use of spent mushroom compost in snack products

Brennan MA, Derbyshire EJ, Tiwari BK, and Brennan CS. [Enrichment of extruded snack products with co-products from chestnut mushroom \(\*Agrocybe aegerita\*\) production: Interactions between dietary fibre, physicochemical characteristics and glycaemic load](#). *J. Agric. Food Chem*, DOI: 10.1021/jf3008635.

The production of the fruiting bodies of mushrooms results in a large quantity of food waste in the form of spent compost. This study retrieved and then refined the hyphae and the base of fruit bodies from *Agrocybe aegerita* from spent mushroom compost into a freeze-dried powder. This fiber-rich ingredient then was used at inclusion rates of 0, 5, 10, and 15% w/w replacement levels for wheat flour from a control recipe in the manufacturing of ready-to-eat extruded cereal snack products.

Inclusion of mushroom coproduct material (MCM) was significantly correlated to increased product expansion ( $r = 0.848$ ) and density ( $r = 0.949$ ) but negatively correlated to water absorption index (WAI;  $r = -0.928$ ) and water solubility index (WSI;  $r = -0.729$ ). Fiber content could not be correlated to differences in pasting properties of extruded snacks even though snack products with MCM showed significantly lower final viscosity values compared to the control.

The potential glycemic response of foods was significantly lowered by including MCM ( $p < 0.05$ ) with a negative correlation between fiber content and overall area under the curve (AUC) following a standardized *in vitro* digestion method ( $r = -0.910$ ). Starch content, WAI and WSI were positively correlated to AUC of extruded snacks. There was a reduction in the potential glycemic response from including 5% (w/w) of MCM in extruded snacks - a finding that may be of interest to the food industry.



Australian mushroom research abstract accepted at the Nutrition in Medicine conference.

## News from Australia - Glenn Cardwell

### ► After the break

After the summer break in Australia, we are now venturing into the "conference season", our big opportunity to influence health professionals around the country. An abstract about Australian mushroom research has been accepted by the 2nd International Conference on the Science of Nutrition in Medicine (Melbourne, May 2012). This will be a great opportunity to present new data and the CSIRO biennial report on the state of research linking mushrooms to health to a broad range of health practitioners. Of course, we have our usual workshops for dietitians, home economists, nurses and doctors planned throughout the year.

### ► Nutrition Australia

Nutrition Australia, a public health association, held its Annual General Meeting in March. Glenn Cardwell, Dietitian, and Noelene Swain, mushroom promotions officer, presented the mushroom and health story and demonstrated recipes to the attendees.



As the photos demonstrate the attendees, especially nutrition students, had great interest in the mushroom, and enjoyed the recipe tasting.

► **Health professional brochure**

As mushroom nutrition science is rapidly evolving, the Australian mushroom industry updates information for health professionals every year. The new brochure will be available in both print form (for conferences) and as a free online download. It incorporates recent research and the new style of the mid-year launch of the new mushroom public campaign.



Noelene Swain, Mushrooms Promotions Officer.

► **Public poster**

We have redesigned and updated our poster providing 10 healthy reasons why you should be eating three mushrooms every day. The poster will be available to the public and health professionals after the mid-year launch.

► **Media**

With mushrooms being promoted to health professionals, there is a renewed interest from the health-related media. For example, this year the mushroom industry has been approached for stories from the Heart Foundation, Dietitians Association of Australia, Diabetes Australia, Well at Work, and the RMIT University. When the health media believe you have a story to tell, the job is half as easy.

► **Vitamin D**

A study on vitamin D from Deakin University, Melbourne, got a splash of publicity early in the year. One third of Australians are vitamin D deficient. The level is higher in those living in the southern regions of the country during winter. This has generated more media interest in vitamin D mushrooms, including magazine (print and online) and television interviews. More vitamin D mushrooms will arrive on the Australian market during the middle of the year (Australian winter) when there is a greater likelihood of vitamin D deficiency.

There is greater interest in vitamin D mushrooms after more research shows that one in three Australians are D deficient.



## News from Canada - Brittany Stager

► **How Mushrooms Canada uses social media**

► **Website**

The Mushrooms Canada website is the central hub for all communications. All social media platforms that we use point to the website. How is the website integrated to be "social?" You will see several types of plug-ins on Mushrooms.ca that allow the user to quickly connect with the desired platform. The tools we use for this are the Facebook plug-in, the Twitter Feed plug-in, and the Addthis.com button. All can be easily added to any website. The Mushrooms Canada website receives between 400-800 visits per day.

► **Blog**

The Mushrooms Canada Blog is like our classroom - it is used for sharing, teaching and capturing daily/weekly/monthly events. We post all types of helpful and instructive content including Guest Blogger Spots, Behind the Scenes, Recipes of the Month and other generally informative posts like

health, farmer profiles, and care and handling tips. The blog not only works as sort of a diary, but it is also used for SEO (Search Engine Optimization). The Mushrooms Canada blog is averaging about 6,500 page views per month. Statistics from our Addthis.com widget show that our most shared content is our Guest Blogger spots.

#### ► **Twitter**

Mushrooms Canada's twitter is like the water-cooler, it's where you go to hang out, chat and share your hourly/daily events. It is used to create and build relationships with consumers, bloggers and industry influencers. Mushrooms Canada tweets approximately 8-10 times per day, using the 4:1 ratio – so, for every one tweet about ourselves, we tweet 4 about others. It is used on a regular basis to push information, like a recent blog posts, or to highlight certain articles/pages/features and of course to communicate with bloggers. Mushrooms Canada has just over 1,300 followers on twitter. Our most popular re-tweets are Guest Blogger spots and our mushroom FAQs, how to's, and one line recipe tips.

#### ► **Facebook**

Facebook is like the hangout, it's where you engage in conversation; ask questions, share experience and photos. We then use it to engage consumers with our content. It is used on a regular basis to push information, like recent blog posts or to highlight certain articles/pages/features. Mushrooms Canada posts daypart relevant content, once per day. So if it's morning we post breakfast, if it's dinner we post dinner, if it's almost the weekend we post an entertaining recipe. Mushrooms Canada has a little over 450 fans, all of which we have gained organically (ie, no paid advertising program).

#### ► **Pinterest**

Pinterest is a new social platform, but has grown at an exponential rate over the past 7 months. Mushrooms Canada uses Pinterest like "eye-candy". It's where we go to pin mushroom recipes that interest and inspire us. To date Mushrooms Canada has 569 pins, 324 repins and 60 likes on pins. We also have up to 100 followers on each of our boards. The most popular board is our Mushrooms For Dinner Board.

#### ► **YouTube**

Although Mushrooms Canada is not currently posting new recipe videos, we are getting a lot of traction out of the batch of 25 we currently have on our YouTube Channel. To date Mushroom Canada has 176 Channel Subscribers and 216,462 video views. Our most popular video is our "Simple Sautéed Mushrooms."

We find that all these tools listed above are the optimal mix for Mushrooms Canada to achieve our social media objectives.

A mix of online tools can help meet social media objectives.



### News from Spain - Carmen Urbina Sáenz

#### ► **Promoting mushrooms as a quality regional product**

Last March the Government of La Rioja organized the 2<sup>nd</sup> Quality Food Tasting as part of the agro-alimentary promotion program "La Rioja Capital". This program aims to promote consumption of quality agro-alimentary products from the region.

Asochamp and CTICH (Centro Tecnológico de Investigación del Champiñón de

La Rioja) took part in this event at the *Electra Gran Casino* in Logroño, thanks to its Mushroom and other Fungi of La Rioja guarantee mark: "*Champiñón y Setas de La Rioja*".

Attendees learn the history, nutritive and health properties of Fungi.

CTICH researchers gave two presentations "Mushroom and other Fungi: Nutritive and Healthy" and "Mushroom and other Fungi: Tasty and Versatile". Carmen Urbina made an historical introduction of Fungi and highlighted their nutritive and healthy properties, especially those Fungi that later were tasted: *Pleurotus eryngii*, *Pholiota nameko*, *Hypsizygus tessulatus* (beige variety) and *Agrocybe aegerita*. Then Maria Luisa Tello explained Fungi growing. According to CTICH pilot-plant procedure the cultivation of Fungi is done using sterilized substrate in bags. She also remarked on fruiting body organoleptic characteristics and their versatility in cooking. Thereafter attendees could observe fresh fruiting bodies, experiment with their texture and flavor and discuss their experiences and feelings. Finally they tasted the four delicious species cooked.



### News from the United States - Heidi Gengler

#### ► Launching 80:20 mushroom/meat concept with recipes and more

At its core, the 80:20 concept of mixing mushrooms and meat focuses on the value that mushrooms bring to the plate, either for calorie savings with a swap, protein extension with an addition, an extra serving of vegetables



The Council's Cremini and Pork Meatballs are made with 60 percent mushrooms and on average contain 25 percent fewer calories and 40 percent less fat than the traditional alternative.

or overall cost-savings – all concerns of various audiences in the current nutrition, food and health environment. The Mushroom Council (Council) is launching an integrated marketing program throughout the year to educate audiences on this concept with the aim of having as many people as possible experience it first hand to build strong mushroom advocates.

To kick off 80:20 outreach or “Swapability,” the Council leveraged the New Year and National Nutrition Month to educate consumers about the weight management benefits of substituting mushrooms for higher-calorie ingredients in recipes. Working with registered dietitian Elizabeth Ward, the Council worked mushrooms into conversations about this year’s theme, “get your plate in shape” through healthier food choices and eating habits.

While the Swapability story will be told throughout the year, here is a snapshot of activity so far:

- Following the Partnership for a Healthier America’s Building a Healthier Future Summit last fall, the Council continues to see enthusiasm for 80:20 from relationships cultivated in hopes of fostering long-term, successful collaboration.
- As a partner in the U.S. Department of Agriculture, Center of Nutrition Policy and Promotion National Strategic Communicators network, Council representatives attended the in-person meeting in Washington D.C. and used the opportunity to integrate 80:20 messages into conversations and establish the Council as a content resource.

- Worked with Elizabeth Ward, MS, RD as spokesperson to create and promote low-calorie, low-sodium mushroom and meat blend recipes, which were featured on a [Swapability](#) page on [mushroominfo.com](#), on the [Mushroom Channel blog](#), a [Facebook recipe tab](#) and a [Pinterest Swapability board](#).



- A Council sponsored Twitter Chat with Liz Ward garnered 5,200 uses of the #mushrooms hashtag among 225 participants for over 51,000 impressions surrounding Swapability.
- The Council celebrated National Registered Dietitian Day by tweeting personalized e-cards to 35 nutrition experts and sending mushroom growing kits to top-tier influencers, earning the Council tremendous [goodwill](#) among these audiences.
- Conducted media outreach surrounding 80:20; highlights include:
  - The ever popular [Hungry Girl](#) daily e-newsletter reached 1.2 million consumers with mushroom messaging: [HG Salutes: Portabella Mushrooms!](#)
  - Liz Ward contributed to a [Men's Fitness](#) article, which brought Swapability to life for the first time in print with a photo of an 80:20 mushroom burger
  - [Detroit News](#) featured the Council’s Cremini and Pork Meatballs 80:20 recipe
  - [New York Times](#) recipes for health included a mushrooms Swapability vegetarian burger

Swap mushrooms to lower calories, extend protein, save money and increase vegetable intake with great taste.

- The Council's Mushroom Tacos with Salsa Verde recipe made its debut demonstrating 80:20 at the Taste of Home Spring Cooking Schools.
- The Council coordinated a day in Compass foodservice test kitchens to demonstrate 80:20 and generate ideas for a June superfood promotion.

Be sure to visit the Mushrooms and Health website <http://www.mushroomsandhealth.com/>

Send what's happening in your country to communicate the benefits of mushrooms to consumers, shoppers, households, doctors, health professionals and the media to [info@mushroomsandhealth.com](mailto:info@mushroomsandhealth.com).

**Note:** The *Bulletin* provides links to other sites for your convenience and information. These sites contain information created, published, maintained or otherwise posted by organizations independent of the Initiative which does not endorse, approve, certify or control these sites and does not guarantee the accuracy of the information contained on them.

► **Initiative project team**

- Greg Seymour, President, ISMS General Manager AMGA, Australia; Manager, Mushrooms and Health Global Initiative
- Bart Minor, President, Mushroom Council, United States
- John Collier, Group Research and Development Manager, Monaghan Mushrooms Ltd, Republic of Ireland
- Mary Jo Feeney, Mushrooms and Health Global Initiative Operations Manager, Bulletin Editor, United States
- Glenn Cardwell, Accredited Practising Dietitian, Nutrition Impact P/L, Australia
- Chris Rowley, Communications Consultant, Australia
- Heidi Gengler, Vice President, Edelman Public Relations, United States

► **Strategic communications group**

Members of the Strategic Communications Group strengthen the Initiative's communication capability and develop a local public relations presence in each country whose industry is contributing financially to the project. Members of this group help facilitate stories about mushrooms and health appearing in their local media, monitor mushroom nutrition and health research, liaison with scientists, media and other influencers, and provide feedback to the Initiative. They include:

- Michal Slawski - United Kingdom
- Franz Schmaus - Germany
- Francois Marche - France
- Ignace Deroo - Belgium
- José Antonio Jiménez Hernandez - Spain
- Kent Stenvang - Denmark
- Dick Roodhuyzen de Vries - Netherlands
- Elizabeth O'Neil - Canada