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— Guy Johnson,
Johnson Nutrition Solutions in Kalamazoo, Mich.

Need vitamin D? Think mushrooms

Ultraviolet light has transforming effect on humble, but tasty, fungi

By DAWN WITHERS
The Salinas Californian

Normally grown in dark places, mushrooms could become a valuable source of vitamin D with a little exposure to light.

Pilot research done earlier this year in part by Monterey County's Monterey Mushrooms shows exposing the fungi to doses of ultraviolet light converts a chemical in mushrooms, ergosterol, into vitamin D-2, which aids calcium absorption and may slow or stop the growth of cancer cells.

What this means, said Mary Jo Feeney, a nutrition consultant and coordinator of the Dublin-based Mushroom Council's nutrition research program, is consumers will have an inexpensive, abundant source of an important vitamin.

"We used to think that vitamin D was more or less tied to calcium absorption, and it still is, but there is a lot of preliminary research showing an expanding role for vitamin D," Feeney said.

If research does yield vitamin D-2-enriched mushrooms that are commercially viable, reaching consumers could be a relatively easy process, said Guy Johnson, who runs Johnson Nutrition Solutions in Kalamazoo, Mich., and has worked on food nutrition for 25 years. He also advises the Mushroom Council.

The Food and Drug Administration wouldn't need to approve sale of the vitamin



RICHARD GREEN/THE SALINAS CALIFORNIAN

Steve Lodder, a researcher with Amycel Spawn Mate, looks at a batch of portabella mushrooms at Monterey Mushrooms.

ABOUT THE RESEARCH

Preliminary studies have shown that when exposed to ultraviolet light, mushrooms can produce up to 869 percent of the

recommended daily value of vitamin D-2, which aids in calcium absorption.

D-enriched mushroom, though it could audit nutrition labels for accuracy, Johnson said.

"There is a lot of excitement in the nutrition community about vitamin D, for not only calcium absorption and bone health, but emerging areas of science where people think vitamin D is beneficial for muscle strength and (pre-

venting) prostate cancer and breast cancer," he said.

Crucial time for experiment

There are very few natural dietary sources of the vitamin. While it's found in dairy products and fish, most people acquire it by synthesizing it through their skin when exposed to ultraviolet rays of the sun.

In their quest to boost the fungi's vitamin content, Monterey Mushrooms and the Pennsylvania State University Mushroom Research Center, working in conjunction with the Mushroom Council, exposed mushrooms both before and after harvest to ultraviolet light. Monterey Mushrooms used white button and Portabella mushrooms in its initial experiment, which started last fall.

"We're just trying to see how we can get this into a practical environment," said Steve Lodder, a researcher with Amycel Spawn Mate, which is conducting research

for Monterey Mushrooms.

In the next three months, Lodder said, his group will look into how well and how long exposed mushrooms maintain their vitamin D-2 levels when stored at cooler temperatures.

The period will be a suspenseful time for the researchers, he said.

The planned experiments, Lodder said, could be where everything falls apart if mushrooms lose their vitamin D-2 over time and become unsuitable for commercial sale.

But, he said, the preliminary research shows great promise

and could have a tremendous impact on the mushroom industry.

"There is a huge amount of potential," Lodder said.

Costly tests

Because mushrooms are grown in tightly stacked trays with little light exposure, Monterey Mushrooms is using harvested brown mushrooms in its research, because white mushrooms turn brown when exposed to ultraviolet light, much like human skin when exposed to the sun.

The tests are expensive, Lodder said — about \$250 per test — and entail sending exposed mushrooms to a lab for vitamin D-2 screenings.

He said it's still too early to know how the findings could affect commercial mushroom growers or how mushroom growers can best expose their crop to ultraviolet light.

The mushrooms used in Monterey Mushrooms' experiments were exposed within one hour of harvesting, according to data published in the May 2006 issue of Mushroom News.

Post-harvest white button mushrooms exposed to ultraviolet light for five minutes produced 869 percent of the recommended daily value of vitamin D and Portabellas exposed for 15 minutes contained 781 percent of the recommended daily value, according to the report.

When stored at about 53 degrees Fahrenheit for three days to simulate a retail environment, the report says mushrooms lost some vitamin D-2 but retained levels greater than 100 percent of the recommended daily value.

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Value added produce: Here's how it gets to you



A coring crew prepares produce for packaging at Mills Farms Wholeaves facility in Salinas.



Jorge Diaz arranges produce boxes in the packaging room.



The packaging line prepares cored and prepared produce for boxing and, ultimately, shipment to a store near you.



Maria Picazo, foreground, works on another part of the preparation line.

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The Salinas Californian