

BAKING UPDATE

Vitamin D: An opportunity for the baking industry



Practical technology from Lallemand Inc., parent of American Yeast, producers and distributors of Eagle® yeast, fresh and instant.

Legislation Update

ON October 19, 2010, scientific experts on EFSA's Panel on Dietetic Products, Nutrition and Allergies (NDA) have adopted opinions on three 'general function' health claims for vitamin D taking into consideration all available scientific data (Article 13(1) of Regulation (EC) No 1924/2006).

EFSA HEALTH CLAIM

Scientific opinion on the substantiation of health claims related to **vitamin D and normal function of the immune system and inflammatory response, maintenance of normal muscle function and maintenance of normal cardiovascular function:** The Panel concluded that a cause and effect relationship has been established between the dietary intake of vitamin D and contribution to the normal function of the immune system and healthy inflammatory response, and maintenance of normal muscle function. On the basis of the data presented, the Panel concludes that a cause and effect relationship has not been established between the dietary intake of vitamin D and maintenance of normal cardiovascular function.

Scientific opinion on the substantiation of health claims related to **vitamin D and maintenance of bone and teeth, absorption and utilisation of calcium and phosphorus and maintenance of normal blood calcium concentrations, cell division, and thyroid function:** The Panel concludes that a cause and effect relationship has been established between the dietary intake of vitamin D and maintenance of normal bone and teeth, absorption and utilisation of calcium and phosphorus and normal blood calcium concentra-

tions, and normal cell division. The Panel concludes that a cause and effect relationship has not been established between the intake of vitamin D and thyroid function.

Scientific opinion on the substantiation of health claims related to **calcium and vitamin D and maintenance of bone:** The Panel concludes that a cause and effect relationship has been established separately between the consumption of calcium and vitamin D and the maintenance of normal bone. The following wording reflects the scientific evidence: "Calcium and vitamin D are needed for the maintenance of normal bone".

FDA FOOD ADDITIVE PETITION

In December 2009, Lallemand Inc. submitted a food additive petition, on behalf of the US baking industry, to amend the FDA food additive regulations to provide for the safe use of vitamin in yeast based baked goods at levels not to exceed 400 IU per 100 grams of product from vitamin D yeast (instead of the currently permitted level of 90IU vitamin D per 100 g food). This petition addresses the fact that many people's intakes are below their Adequate Intakes (AI) for vitamin D and requests that the safe limit be increased to 400IU of vitamin D per 100 g of yeast-raised baked goods.

"We expect to receive soon a positive response to our FDA petition. Upon approval by the FDA, bakers will have the opportunity to achieve the levels of vitamin D necessary to make "excellent" or "good" sources claims, giving them one more tool at their disposal to reinforce the contribution bread can make to a healthy diet" says Jean Chagnon, CEO of Lallemand Inc. ●

Increasing the Recommended Intake Value

THE current adult Adequate Intake (AI) for vitamin D is 200 IU per day (5 micrograms). This value is set by the Institute of Medicine (IOM) and used by both the US Food and Drug Administration (FDA) and Health Canada to establish nutrient intake values for public health policy and nutritional labeling purposes. The Upper Limit (UL) for vitamin D for both countries is 2,000 IU per day. For Nutrition Facts panel information and content claims, FDA pegged the Daily Value at 400 IU per day, while Health Canada follows a level of 200 IU.

Concerned that intakes of vitamin D and calcium may be inadequate to meet public health goals, FDA, Health Canada, and the US Department of Agriculture asked IOM to reassess the dietary requirements (AI and UL) of both nutrients. For this reason, on March 26th, 2009, an IOM committee was created to undertake a study to assess current relevant data and update as appropriate the Daily Recommended Intakes for vitamin D and calcium. In November 2010, findings for the 24-month IOM study will be publically released. Most experts believe a big increase is in the works, with AI set between 800 and 1,000 IU per day and with a significant increase in the UL, possibly as high as 10,000 IU per day. ●

American Consumer Awareness

A NEW Angus Reid survey conducted in the USA for Lallemand during the first week of September 2010, reveals that a larger proportion of American consumers (44% compared to 37% last year) believe that vitamin D plays a great role in maintaining or improving their health. More than three quarters of the survey's respondents (79%) believe that vitamin D plays a great or moderate role in their health, and 56% of consumers say they would prefer to buy bread that is naturally rich in vitamins than to buy bread that is fortified with vitamins (6%). These new results suggest a growing awareness of vitamin D and therefore a greater opportunity to be seized by the baking industry. ●

VITAMIN D INTAKE BY SOURCE

IN preparation for the FDA food additive petition for vitamin D yeast for use in bakery products, the potential maximum dietary exposures to vitamin D from all sources were estimated based on the proposed maximum use level of 400 IU vitamin D per 100 g of

yeast containing baked goods as proposed in the petition and are presented in the table below.

This estimate is based on a mean total intake for the population 1 year old and older of 1008 IU/day and where the 90th percentile of this population would get 1664 IU/day. ●

FOOD	%	FOOD	%
Yeast containing baked products*	35	Cheese & cheese product	6
Dietary supplements	16	Naturally occurring	2
Milk & Milk products	12	Soy products/Meal replacements	1
Breakfast cereals	10	Margarine	<0.5
Fruit juices/juice drinks	9	Infant formula	<0.5
Grain products & pasta	9		

*if Lallemand FDA food additive petition for 400 IU vitamin D yeast/100g of bakery products is accepted

HOW BIG IS AN INTERNATIONAL UNIT

That depends. It's not the same for every substance. An International Unit (IU) is not a defined mass quantity but a measure of biological activity. International agreements specify the biologic effect expected of a dose of 1 IU of a particular substance, and these doses differ according to substance.

For vitamin D, 1 IU equals 0.025 micrograms. At the moment, for foods to qualify as an "excellent source" of vitamin D, a serving must contain 20 percent of the vitamin's daily requirement 200 IU. The physical amount of vitamin D required to deliver 40 IU would amount to only 1 microgram, or 0.00000014 ounce.

An Opportunity for the Baking Industry

TWO new studies suggest that bakers can now to respond to the growing consumer awareness of vitamin D's benefits, allow bread to naturally become the primary dietary source of vitamin D (perhaps ahead of milk), and strengthen bread's healthy attributes.

LALLEMAND VITA D BAKERS YEAST BIOAVAILABILITY

A study sponsored by Lallemand and led by Professor Christel Lamberg-Allardt from University of Helsinki aimed to evaluate the bioavailability of vitamin D from bread baked with vitamin D2 (ergocalciferol) containing baker's yeast, using 25 µg equivalent to 1000 International Unit (IU) as the daily dose. Results showed that bread baked with vitamin D2 containing yeast had an equal effect on vitamin D (25-Hydroxyvitamin D) serum level as vitamin D2 supplement.

Natural dietary sources of vitamin D are limited. Vegetarian and persons with lactose intolerance who are not reached by dietary sources of the current fortification policy could benefit from the introduction of a low-fat staple food, such as bread naturally rich in vitamin D. The senior author of this study Dr. Christel Lamberg-Allardt, who is Professor in Nutrition and Head of Department of food and environmental sciences at University of Helsinki

(Finland), and an internationally recognized expert in vitamin D actively involved in the elaboration of European nutrition policies, concludes: "This 4 weeks trial clearly showed that bread baked with vitamin D2 containing yeast had an equal effect on S-25OHD concentration as a vitamin D2 supplement".

VITAMIN D2 AS EFFECTIVE AS VITAMIN D3

Results from a new bioavailability study sponsored by Lallemand and carried at Purdue University have shown that bread made with Lallemand Vita D bakers yeast (yeast with high vitamin D2 content) can help maintain vitamin D status, and improve bone health markers as well as a vitamin D3 supplement.

Vitamin D exists in two forms, vitamin D2 and D3; previous comparative studies on bioavailability of these two have shown conflicting results. According to Connie M. Weaver, distinguished Professor, Head of the Department of Foods and Nutrition at Purdue University, and a newly appointed member of the Institute of Medicine of the National Academies, who led this study: "These results suggest that the bioavailability of this innovative source of vitamin D2 obtained from bread made with vitamin D rich bakers yeast is comparable to a vitamin D3 supplement." ●

Lallemand Vita D Yeast

HELPING to satisfy consumers' quest for more natural and vitamin D rich ingredients, during the regular production process Lallemand's yeast is exposed to a source of light that naturally transforms the sterols present in yeast into vitamin D. In this way, all Lallemand North American bakers yeasts (Eagle®, Lallemand®, Instaferm®) are natural and vegetarian sources of vitamin D that can enhance the vitamin D content of baked goods, and of bread in particular:

Vita D yeast cream (liquid) naturally contains 680 IU Vitamin D/100g of bakers yeast, based on 18% solids.

Vita D packaged in bags (crumbled) or blocks (compressed) naturally contains 1135 IU Vitamin D/100g of bakers yeast, based on 30% solids.

Instaferm® Vita D naturally contains 3590 IU Vitamin D/100g of instant dried yeast, based on 95% solids.

Instaferm® Vita D Plus naturally contains 2,000,000 ±15% IU vitamin D/ 100 g of instant dried yeast, based on 95% solids

Q: How can manufacturers of baked goods accurately label vitamin D in baked products, especially if the carrier is yeast?

A: It is true that each yeast raised goods formula uses different levels of yeast. Since the vitamin D content of Lallemand's yeast is at a standard level, the bakery who wishes to label the vitamin D content of its products can easily calculate the resulting level of vitamin D for each formula. This is the same as for all other nutritional values on the label. Lallemand also offers an Excel calculator for this purpose.

For more answers to your questions on how to naturally enhance the vitamin D content of your bread and baked goods, please visit our website: www.lallemand.com/vitamind/our-yeast-with-vitamin-d/natural-source-of-vitamin-d ●

Dr Holick's New Book

DR. Michael Holick has studied vitamin D for more than 30 years and has published a new book: *THE VITAMIN D SOLUTION - A 3-step Strategy to Cure our Most Common Health Problem* (Penguin/Hudson Street Press; April 1, 2010) which identifies the causes of vitamin D deficiency and outlines why it is essential to our health. This book also provides a 3-step program for rebuilding and maintaining an optimal level of vitamin D which combines a sensible amount of sun exposure, vitamin D supplements and foods rich in vitamin D.

What do obesity, heart disease, depression, diabetes, and fibromyalgia have in common? The answer is vitamin D deficiency. More than 200 million Americans lack this essential vitamin and as a result suffer from a host of daily annoyances, chronic conditions, and even life-threatening illnesses. Increasing levels of vitamin D can treat, prevent, and even reverse a remarkable number of daily ailments, from high blood pressure to back pain; lessen the symptoms of chronic conditions such as diabetes and arthritis; and actually prevent infectious diseases, including H1N1 and cancer. Dr. Holick also credits vitamin D with improving infertility, weight control, memory and mood.

Michael F. Holick, M.D., Ph.D., is a professor of medicine, physiology and biophysics at Boston University Medical Center. He serves as the director of the General Clinical Research Unit, the Bone Health Clinic, and the Heliotherapy Light and Skin Research Center. ●

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BAKING UPDATE

Lallemand Baking Update is produced by Lallemand Inc. to provide bakers with a source of practical technology for solving problems. If you would like to be on our mailing list to receive future copies, or if you have questions or comments, please contact us at:

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