



FOOD SCIENCE

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“
OF THOSE PRODUCTS THAT INCLUDED BETA-GLUCANS WITH THEIR NUTRITIONAL INFORMATION, THOSE LAUNCHED WITH OAT BRAN CONTAINED THE HIGHEST AVERAGE AMOUNT OF BETA-GLUCANS LISTED
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Healthy oat beta-glucan is promoted for cardiovascular benefits

- Beta-glucans from cereal are known for their ability to lower cholesterol whereas beta-glucans from yeast and mushrooms may have benefits for the immune system
- Guidelines for health claims for oat beta-glucan have been published in the US, Europe, and Canada
- Rolled oats and oats are leading ingredients used in food and drink products mentioning “beta-glucan” on pack

Beta-glucans have multiple health benefits

Beta-glucans are a class of non-digestible polysaccharides found in oats, barley, mushrooms, and yeasts. Beta-glucans from yeasts and mushrooms have been recognized for their ability to stimulate the immune system. For example, yeast beta-glucan is emerging in supplements, growing up milk and drinking yogurt/liquid cultured milk with immunity claims.

The beta-glucans from cereals are comprised of mixed-linkage (1, 3) (1, 4)-β-D-glucose units whereas the beta-glucans from mushrooms and yeasts are primarily comprised of mixed-linkage (1, 3) (1, 6)-β-D-glucose units. This difference may be responsible for their different health benefits. However, new research suggests that beta-glucans from cereals may also have a beneficial effect on the immune system.

In cereals, such as oats and barley, beta-glucans are known for their ability to lower blood cholesterol and insulin resistance. Beta-glucans are a form of soluble dietary fiber, found in the outer layers of the oat grain, which works by dissolving in the digestive track to form a thick gel. This gel then binds to excess cholesterol, preventing it from being absorbed by the body.

US hot cereal consumers are looking for fiber. According to Hot and Cold Cereal – US, August 2015, 89% of hot cereal consumers look for high fiber in hot cereal. Additionally, 51% of US consumers who are eating more hot cereal are doing so because it is a good source of fiber.

Oats and beta-glucans from oats have recognized health claims

The health benefits of oats and oat beta-glucan have been recognized by health agencies in the US, Canada, and Europe. In the US, the US Food and Drug Administration (FDA) has authorized a health claim for beta-glucan soluble fiber from specified whole oat and barley sources that states soluble fiber from these foods, as part of a diet low in saturated fat and cholesterol, may reduce the risk of cardiovascular disease.

The cholesterol-lowering benefits of oat beta-glucan have been recognized by the European Food Safety Authority (EFSA) and the European Commission, with an Article 14 health claim, which is a health claim referring to the reduction of disease risk, having been approved. The claim “Oat beta-glucan reduces the cholesterol level in the blood, the lowering of the blood cholesterol level can reduce the risk of coronary heart disease” is permitted on

food and drink products containing beta-glucan at the specified levels.

Health Canada has also provided guidelines for health claims on the blood

BETA-GLUCAN FOR IMMUNITY

Immudek SH Forte Dietary Supplement (Italy)

A dietary supplement that contains beta-glucan from yeasts along with other ingredients. The product is said to contribute to the normal function of the immune system.



Yogurt Gloria Pro Defensis Vanilla Flavored Yogurt (Peru)

A gluten-free drinking yogurt that contains beta-glucan from yeasts that reinforces the immune system. This product is targeted at children, recommended by the Peruvian Immunology Society.



Enfakid A+ Fortified Milk (Vietnam)

A fortified milk that provides respiratory immunity support with DHA, beta glucan, vitamin A, zinc and vitamin C.



cholesterol lowering effect from oat products and barely products. These authorized health claims have helped consumers trust the health claims made on these products. According to Hot and Cold Cereal – Canada, July 2015, 47% of Canadian consumers who eat cold and/or hot cereal agree they trust the health benefits cereal promise.

Oat bran and rolled oats stand out for beta-glucan content

In cereals, beta-glucans are concentrated in the bran and is also found throughout the endosperm, specifically in the aleurone and sub-aleurone layers. The aleurone layer is the outermost layer of cells from the endosperm, between the endosperm and the bran layer.

Some of the oat ingredients that are known sources of oat beta-glucan include oat bran, oat meal, and rolled oats. According to a study published in Food Chemistry, oat bran contains 6-9% beta-glucan. Beta-glucan can also be extracted and purified as an ingredient. According to the same study in Food Chemistry, researchers have found that beta-glucan from pure fractions behaves differently in the gastrointestinal tract than beta-glucan from oat bran, which could have implications for the health benefits of these ingredients. Although both beta-glucan from oat bran and pure fractions of beta-glucan are beneficial to health,

CHOLESTEROL LOWERING BENEFITS OF BETA-GLUCAN PROMOTED ON PRODUCTS

Vetta Smart Pasta Spagetti (Indonesia)

Pasta made with beta glucan, which is said to help lower cholesterol.



Vivi Wellness Pineapple, Orange, and Mango Drink (Italy)

A blend of fruit juices and beta-glucan. According to the manufacturer, beta-glucan contributes to the maintenance of normal levels of cholesterol.



Cuckoo Low Fat Yogurt with Bircher Muesli, Apple & Cinnamon Spice (UK)

A yogurt and muesli mix that is a blend of wholegrain jumbo oats, linseed, creamy low fat yogurt and fruit. As part of a healthy lifestyle and a diet low in saturated fat, each 150g serving is claimed to contain over 33% of daily beta-glucan recommended to help lower cholesterol.



Trader Joe's Organic Multigrain Hot Cereal (US)

A 100% wholegrain rye, barley, oats and wheat hot cereal that is an excellent source of fiber. According to the manufacturer, soluble fiber from oatmeal, as part of a diet low in saturated fat and cholesterol, may reduce the risk of heart disease. One serving of these oats supplies 2g of the 3g of beta glucan soluble fiber necessary per day to have this effect.



Quaker Oats Raisin Oat Granola (Egypt)

According to the manufacturer, this wholegrain cold cereal is naturally high in fiber and is said to help lower cholesterol due to beta-glucan from oats.

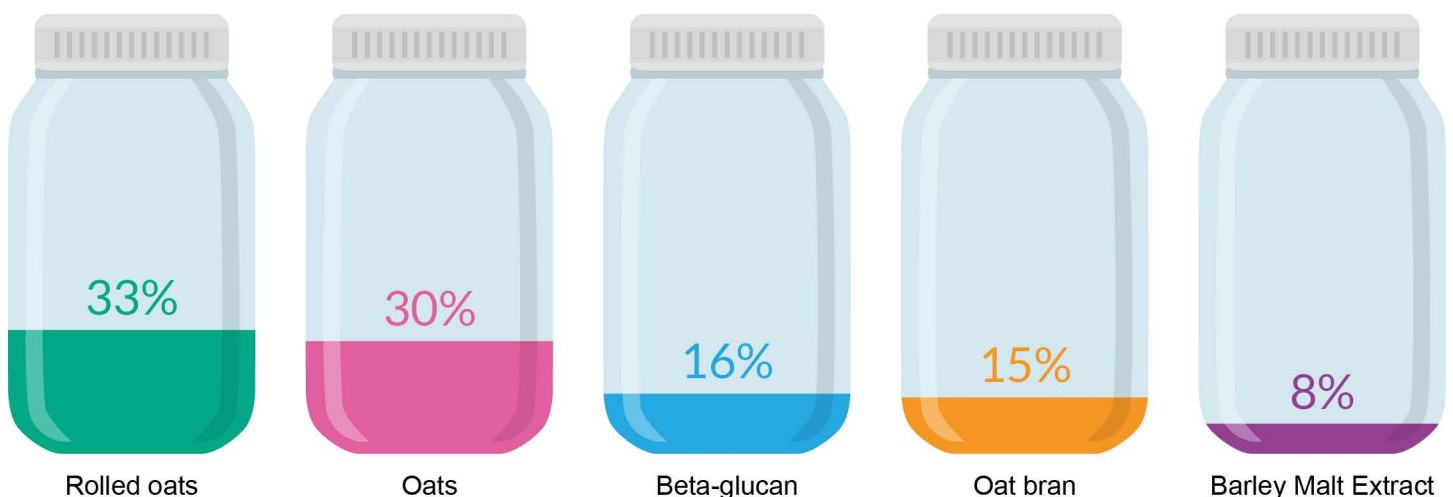


they may have different mechanisms of action in the gastrointestinal tract. Some researchers have theorized that the beta-glucan from oat bran is more protected from surrounding particles, which affects the depolymerization rate of oat bran beta-glucan differently than pure fractions of beta-glucan, resulting in different viscosities in the gastrointestinal tract.

Between 2011 and 2015, rolled oats were the primary ingredient used in food and drink products launched that mentioned beta-glucan, followed by oats, beta-glucan, and oat bran. Products that mentioned

beta-glucan were defined as products that contained beta-glucan with word variants in a full text search. DSM's OatWell oat beta-glucan ingredient is an oat bran powder especially high in oat beta-glucan, according to a white paper by DSM. (See Figure 1)

FIGURE 1: OATS BARLEY, AND BETA-GLUCAN INGREDIENTS USED IN FOOD AND DRINK LAUNCHES WITH "BETA-GLUCAN" POSITIONING*, TOP FIVE, GLOBAL, 2011-15



*Where full text search matches beta-glucan with word variants
Source: Mintel GNPD

According to Hot and Cold Cereal – US, August 2015, 37% of US consumers who eat hot cereal claim to always read the nutritional information on cereal. Additionally, 85% of US consumers think it is important for packaging to communicate nutrition information, according to Food Packaging Trends – US, July 2014. While 57% of food and drink products launched that mentioned beta-glucan between 2011 and 2015 made a cardiovascular claim and 51% made a high/added fiber claim, the nutritional information about soluble fiber and beta-glucans are not always found on a product's nutritional fact panel.

Of global food and drink products launched that mentioned beta-glucan during that time, 89%, of these products included nutritional information about fiber. Only 7% of these products specifically included soluble fiber and 47% included beta-glucans on the products' nutritional information. However, it is important to note that labeling regulations differ by country, which can explain some of the differences in fiber information provided.

Oat bran ingredients were more likely to include nutritional information about beta-glucans on pack. In fact, 64% of food and

drink launches that mentioned beta-glucan used oat bran included beta-glucans in the product's nutritional information whereas only 21% of food and drink launches with beta-glucan as an ingredient did so.

Of those products that included beta-glucans with the product's nutritional information, products launched with oat bran contained the highest average amount of beta-glucans listed, with an average of 5.02g of beta-glucans per 100g/ml of product. (See Figure 2)

FIGURE 2: BETA-GLUCAN NUTRITIONAL INFORMATION FOR TOP FIVE OATS, BARLEY, AND BETA-GLUCAN INGREDIENTS USED IN FOOD AND DRINK LAUNCHES WITH "BETA-GLUCAN" POSITIONING, GLOBAL, 2011-15

Ingredient	% of launches with ingredient that include nutrition information on beta-glucan content	Average beta-glucans (g per 100g/ml)**
Rolled oats	43	3.69
Oats	58	1.65
Beta-glucan	21	2.95
Oat bran	64	5.02
Barley malt extract	47	3.45

*Where full text search matches beta-glucan with word variants

**Average from products that contained beta-glucans nutritional information

Source: Mintel GNPD

PRODUCTS THAT INCLUDE BETA-GLUCANS WITH NUTRITIONAL INFORMATION

Quaker Oats Oat Flakes (France)

A hot cereal made with 100% oat flakes. This product is made from Scottish oat which is rich in specific fibers, like beta gluten, that naturally regulates cholesterol. A 40g serving of oats contains 1.4g of beta-glucans.



Kellogg's All Bran Apricot & Almond with Sultanas & Pepita Seeds High Fibre Muesli (Australia)

A high fiber muesli that is said to supports digestive health, is high in whole grain, has a low GI content, has 25% more fiber than other muesli, and beta-glucan to help lower cholesterol. A 45g serving provides 1.1g of beta-glucans.



OatWell Strawberry Flavored Instant Drink Mix (UK)

A beverage mix comprised of natural oat bran powder, rich in cholesterol-lowering oat beta-glucans that may have a beneficial effect on reducing high cholesterol and risk of coronary heart disease. The product is high in fiber and contains 3g of beta-glucans per 15g serving.



Krithi Kai Eleon Bars with Chocolate & Cranberry (Greece)

Organic bars made with wholegrain barley flour, walnuts, almonds, honey and real dark chocolate with 62% natural cocoa. These organic bars are rich in prebiotic fibers, which help in the excellent functioning of the bowels. They are also rich in beta glucans, omega-3 and omega-6 fats, which reduce cholesterol level. A 14g bar provides 0.25g of beta-glucans.





THE ANALYST'S VIEW

- With consumers looking to add more fiber into their diet, products that contain beta-glucans should clearly communicate beta-glucans' role in health as a soluble fiber.
- Where permitted, health claims for beta-glucan from oats and barley can be used to position products as heart healthy.
- There is an opportunity for more communication about the amount of soluble fiber and beta-glucans in products, especially for consumers who read a product's nutritional information.



Stephanie Mattucci

Global Food Science Analyst

smattucci@intel.com



Stephanie Mattucci

Global Food Science Analyst
smattucci@mintel.com

Biography

Based in Chicago, Stephanie joined Mintel in 2013. As a Global Food Science Analyst, she is enthusiastic to share her food science insights and offer a technical perspective on various topics related to the food industry.

Prior to Mintel, Stephanie worked as a Food Scientist in R&D for an ingredients company in Chicago, where she specialized in seasoning product development and provided technical expertise to customers in the food industry. Stephanie was responsible for developing seasoning blends for a range of applications with a primary focus in poultry.

She worked closely with suppliers, processors and other customers to ensure product success, including several successful national launches. Stephanie has a bachelor's degree in Food Science from the University of Wisconsin-Madison.

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