



Touting the goodness of whole grains

Whole grains are the real deal. They offer a complete package of beneficial nutrients, including fiber, vitamins, minerals, protein, antioxidants, and plant compounds that are known to support good health, such as lignans and sterols.¹

While consumers are starting to understand that they need to consume more whole grains in their diets, decades of refined grain consumption has altered taste expectations for many grain-based products. And while the landscape is starting to change, consumer perceptions of whole-grain foods remain decidedly unclear.

As evidence of this, whole grain consumption does still generally lag behind globally recommended levels, especially in western countries that moved away from whole-grain consumption in the last century or so, according to data from Tufts University's Global Nutrition and Policy Consortium.² According to the database, North America is still in the middle of the road, with an average of 49 grams per day (which is at the lower end of the USDA recommended three to six one-ounce servings daily.)³

Whole-grain products are not consistently defined, which is contributing to consumer confusion. If all whole-grain foods were made with 100% whole grains, the answer would be fairly clear, but many foods contain both whole grains and enriched or refined grains. Since whole-grain content is not disclosed on the Nutrition Facts label, consumers really have no way of knowing what types of grains are used. This confusion was spelled out by a 2016 study, which noted that older adults in particular were unable to correctly identify products as whole grain.⁴

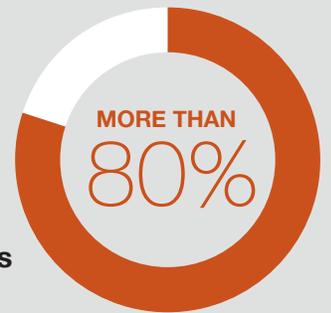
Labeling requirements and whole-grain definitions also vary from country to country. While the FDA has yet to finalize a 2006 guidance on whole-grain labeling, the U.S. Department of Agriculture (USDA^{5,6}) has tried to put some parameters on these foods in regards to school nutrition programs and WIC.^{7,8} The 2014 USDA definition⁹ requires that whole grains must be the first ingredient in the food and must qualify for the FDA whole-grain claim, which requires a product to be 51% whole grain by weight.¹⁰

In Europe, a 2017 proposed definition of a whole-grain product requires that it must be made with at least 30% whole-grain ingredients on a dry-weight basis and contain more whole-grain ingredients than refined-grain ingredients.¹¹

Growing research on the benefits of whole grains is helping to move the needle.

In the 2018 Food and Health Survey from the International Food Information Council Foundation (IFIC), **more than 80% of American consumers now view whole grains as a healthy**

food, right behind vitamin D and fiber, and well ahead of enriched refined grains (which are seen as healthy by 44%).¹²



What's more, nearly six in 10 are now seeking whole grains in their diets, according to the Hartman Group's 2017 Health and Wellness Report.¹³ The report suggests that this is being driven by interest in ancient grains, fiber, mindful sourcing and a desire for overall wellness; whole grains now rank nearly as high as demand for more fiber (63%) and protein (60%).

Appreciation of whole grains' value is also broadening in the United States and beyond, where consumers are now linking their consumption to trending goals like digestive health. According to a survey of 3,000 consumers in the United Kingdom, Australia, Spain, Brazil and the U.S., conducted by *New Nutrition Business*, 61% of the respondents now recognize whole grains as a good choice for promoting digestive health.¹⁴

And whole grains do have plenty of scientific support to recommend them. For example, there is some evidence that whole-grain consumption may be related to reducing the risk of heart disease, stroke, type 2 diabetes and cancer.^{15,16,17,18} What's more, whole-grain, fiber-rich diets are also correlated with maintaining a healthy body weight,¹⁹ have the potential to reduce inflammation,²⁰ and fiber in whole grains supports digestive health.²¹

Opportunities and challenges

As the science expands and product definitions get ironed out, the opportunities for brands to create healthy, on-trend whole-grain products are expanding. According to a new report from Statistics MRC, the whole-grain food market is expected to see a compound annual growth rate (CAGR) of 6.6% to jump from \$29.4 billion in 2015, to \$46.2 billion by 2022.²²

The potential opportunities are prompting product innovation. But working with whole grains alone and in combination with other ingredients also presents formulation challenges. Even incorporating whole grains into bakery products can be vexing. Whole-grain flours, for example, tend to absorb water differently than refined flours, which can impact product appearance, stability and shelf life.

But as consumers increasingly seek products with added nutritional value, formulators are focusing on combinations of whole grains and plant-based ingredients, including pulses (such as chickpeas, peas, and lentils) for added nutrition in snacks, baked items, pastas, cereals and crackers. One of the most common requests is to increase protein in a product while also using whole-grain sources, noted Keyla Rodriguez, a technical manager for starches and sweeteners



in Cargill's Midwest territory. "Many customers are interested in developing a whole-grain cornflake, but it doesn't have the same sensory experience for consumers. Many customers want to push protein and fiber as high as they can to get a high nutritional label. But that brings taste challenges. It might be amazing in terms of nutrition, but the taste and mouthfeel are not like traditional products."

As a result, product formulators need to take each product and ingredient on a case-by-case basis, Rodriguez explained. It is important, for example, for formulators to understand the way each ingredient operates. One of the ways Cargill helps its customers do this, Rodriguez said, is by providing experts who can offer insights on how a whole-grain ingredient might perform in milling operations and how consumers will perceive its taste. "We have a sensory panel that can help with challenges of creating texture in a product when integrating new ingredients," she noted. "It gets feedback from consumers on how they are perceiving the high-value ingredient." This allows product developers to even customize an ingredient that will be the best fit for the product, she added.

One of the final frontiers for whole-grain applications is dairy and beverage products. But drinking your grains has not been a very intuitive concept. Solubility tends to be the biggest issue here, according to Rodriguez. "Nobody wants to be chewing on something that they are trying to drink. It is not a very desirable profile."

That is not to say that companies haven't tried. Early chia- and oat-based beverages struggled with a number of issues, from floating seeds and chunky consistencies to technical limitations, according to beverage consultant James S. Tonkin, founder and president of Healthy Brand Builders. But now, he said, consumers are becoming more tolerant of esoteric plant-based grains in their foods and beverages. Coupled with new processing technologies that maintain all parts of the grain and don't need added stabilizers, emulsifiers and gums, dairy

beverages made with whole grain milked oats and rice are now on store shelves and offer a nutrient-dense beverage that both tastes good and meets consumer demand for sustainability and affordability. Oat milk, for example, is sustainable, less water-intensive than other non-dairy milks, contains sustainable plant protein, and offers sourcing and processing efficiencies. With not only oat-based milks but also oat-based yogurts and cheeses hitting the market, whole-grain foods are poised to move to an entirely new level.

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