

FOOD PRODUCT DESIGN

science ■ concepts ■ applications

Cargill, Inc., Minneapolis, offers a concentrated beta-glucan soluble fiber derived from whole-grain barley. It can be used at levels up to 3% in baked goods, cereals, snacks, beverages and soups. To qualify for an FDA heart-health claim, foods must contain a minimum of 0.75 grams beta-glucan soluble fiber per serving.

Oats also contain beta-glucan and were the original bearer of the heart-health claim. They contain 14% protein and 10% fiber, of which 4% is soluble and 6% is insoluble. Oats are cut, flattened to produce rolled oats, or steamed and flattened to produce quick oats. These processes render whole grain ingredients. Cooking times depend on the cut. Steel cut, or Scottish-type meal, requires 20 minutes to an hour to make. Old-fashioned oats (made from the whole piece) take 5 minutes to prepare. Quick oats have a 1 minute cook time, and instant requires simply the addition of hot water.

Rice is typically classified by the size of the grain. Long grain, such as basmati, Texmati, jasmine and Louisiana pecan, is milled so that it is at least three times as long as it is wide. Medium-grain, such as Arborio, Bhutanese Red and Japonica, is slightly less than three times as long as it is wide, and is sometimes called short-grain rice. Technically, short-grain rice is less than twice as long as it is wide. Sushi, Balinese black and Balinese purple are short-grain rices.

Wild rice is a misnomer. It's not rice at all, but is instead a long-grain marsh-grass seed. Still, its flavor and texture make it compatible with rice dishes.

Rice might be processed in various ways. White rice might be polished to remove the bran and germ. Rice that is soaked, pressure steamed or boiled, and then dried before it is milled, is parboiled. This infuses some of the bran's nutrients in the kernel and gelatinizes the starch, which results in a fluffy cooked texture. Converted rice is parboiled, but is further cooked, shortening prep time. Instant or quick rice is precooked, dehydrated rice.

White rice's germ and bran is removed. Brown rice is a whole grain, as is some of the more-exotic rice, such as forbidden black rice or Bhutanese red rice. There are a number of varieties, including basmati and sushi rice.

FDA recently approved a whole-grain health claim

Triple threat

Barley, oats and rice form a trifecta of health-claim carrying ingredients. The key, of course, is including them in low-fat, low-saturated fat and low-cholesterol foods.



SWEET
RATION

Executive
Summary

- Whole grains from a regulatory standpoint.
- The wide world of wheat.
- Kernels of corn information.
- Safe bets for formulating with the healthy trifecta: barley, oats and rice.

Grain-Based Ingredients

By Cindy Hazen
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Comedian Robin Williams once said, "The first time I ate organic whole-grain bread, I swear it tasted like roofing material."

He's not the only one who recalls the industry's early, dense products. But grain-based products continue to innovate and aerate. The results are lighter and increasingly palatable to mainstream consumers.

In the marketplace

The USDA's food pyramid stresses the importance of grains in the diet. Specifically, it states that consumers should eat at least 3 oz. of whole grains daily, or roughly half of their grain intake. The message seems to be reaching consumers.

FDA allows foods containing at least 51% whole grains by weight of reference amounts customarily consumed (RACC) that are low in total fat, saturated fat and cholesterol to carry a health claim linking them to a reduced risk of heart disease and certain cancers. FDA uses the amount of fiber within the grain to calculate the 51% whole-grain minimum. "Whole wheat contains 11 grams of dietary fiber per 100 grams; thus, the qualifying amount of dietary fiber required for a food to bear the prospective claim may be determined by the following formula: 11 grams X 51% X RACC/100," according to FDA.

A stamp provided to members by the Whole Grains Council, Boston, offers consumers an easy way of knowing the types of grains they are consuming. If a product bears the 100% stamp, all of its grain ingredients are whole grains and it contains 16 grams of whole grain per labeled serving. Products that bear the basic stamp contain half as much whole grain, or at least 8 grams, and may contain some refined grain. As of April 2008, a Whole Grain Stamp appears on more than 1,800 products.

Understanding grains

FDA is specific in defining whole grains as "cereal grains that consist of the intact, ground, cracked or flaked caryopsis, whose principal anatomical components—the starchy endosperm, germ and bran—are present in the same relative proportions as they exist in the intact caryopsis. Cereal grains may include amaranth, barley, buckwheat, bulgur, corn (including popcorn), millet, quinoa, rice, rye, oats, sorghum, teff, triticale, wheat and wild rice."

Although these products are often included in grain-based foods, the FDA does not consider products derived from legumes (soybeans), oilseeds (sunflower seeds) and roots (arrowroot) as grains.