

Whole-Grain Rice Stakes Out Its Claim

PEGGY GREB (D1734-1)



Research leader Elaine Champagne and chemist Fred Shih discuss sharing the good news of the brown rice health claim while preparing for the Rice Utilization Conference, sponsored by ARS and the USA Rice Federation.

Rice, the staple that supports half the world's population, holds an honored place in the culinary traditions of many cultures. In the United States, appreciation for the grain continues to grow as the population diversifies.

Still, a number of consumers are not aware of the many healthful attributes of rice, and some do not know that brown rice is a whole grain. Another misperception is that the bulk of U.S. rice is imported. U.S.-grown rice actually accounts for about 80 percent of all the rice consumed in America.

Understanding the nutrient content of brown rice is key to appreciating the health benefits provided by these satisfying grains. Importantly, several benefits from consuming whole-grain rice have been made clear lately. Since 2008, brown-rice package labels have been carrying the FDA-approved health claim, "Diets rich in whole-grain foods and other plant foods and low in total fat, saturated fat, and cholesterol may reduce the risk of heart disease and some cancers."

It's not that brown rice only recently joined the whole-grain club. Brown rice has always been a whole-grain food. "Whole grain" is defined as a grain whose bran, germ, and starchy endosperm are intact.

A technical change in the way single-ingredient whole-grain packaged products are monitored for compliance led to an announcement by the U.S. Food and Drug Administration (FDA) about using the whole-grain health claim on the labels of brown rice packages.

Capturing the True Value of Rice

"One reason rice is viewed differently now is that a series of innovative rice utilization workshops led to a better understanding of the health benefits of rice," says Anne Banville, vice president of domestic promotion with the USA Rice Federation, based in Arlington, Virginia. "We have been working with the ARS Southern Regional Research Center (SRRC) in New Orleans, Louisiana, to cosponsor these workshops."

Research leader Elaine Champagne, head of SRRC's Food Processing and Sensory Quality Research Unit (FPSQ), spearheaded seven workshops with the USA Rice Federation during a 16-year period.

The 2007 workshop was inspired by heightened emphasis on daily whole-grain consumption in the 2005 *Dietary Guidelines for Americans*. A consensus statement and plan of action were developed during that workshop that led to the USA Rice Federation successfully petitioning FDA to permit whole-grain brown rice to qualify for the whole-grain health claim.

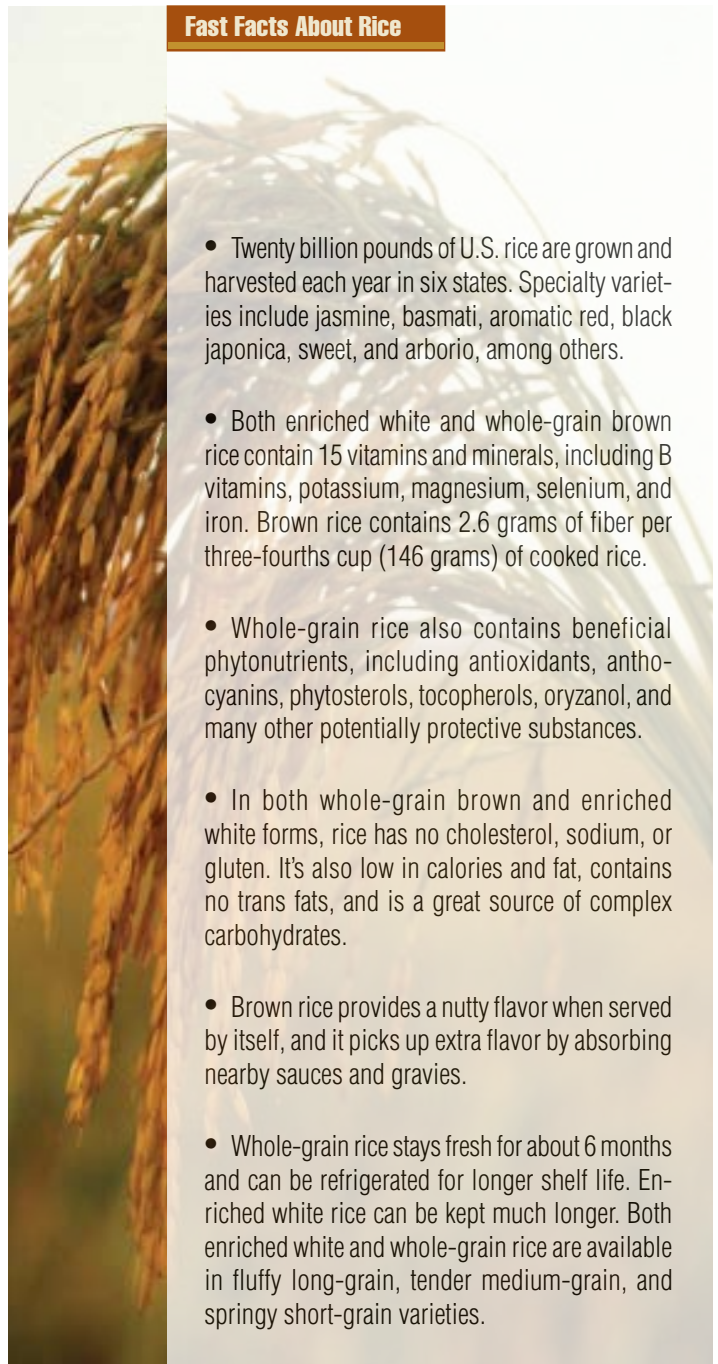
For compliance purposes, FDA is now using the ingredient statement to assess the appropriate use of the health claim on single-ingredient whole-grain foods.

According to MyPyramid.gov, an interactive tool based on the 2005 *Dietary Guidelines for Americans*, the amount of grains people need to eat depends on their age, sex, and physical activity. MyPyramid.gov encourages males and females aged 9 through 50 and older to consume three "ounce equivalents" of whole-

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Food technologist Harmeet Guraya tests the cooking time of different brown rice varieties. Guraya developed a patented treatment that reduces the cooking time of brown rice to 20 minutes.



Fast Facts About Rice

- Twenty billion pounds of U.S. rice are grown and harvested each year in six states. Specialty varieties include jasmine, basmati, aromatic red, black japonica, sweet, and arborio, among others.
- Both enriched white and whole-grain brown rice contain 15 vitamins and minerals, including B vitamins, potassium, magnesium, selenium, and iron. Brown rice contains 2.6 grams of fiber per three-fourths cup (146 grams) of cooked rice.
- Whole-grain rice also contains beneficial phytonutrients, including antioxidants, anthocyanins, phytosterols, tocopherols, oryzanol, and many other potentially protective substances.
- In both whole-grain brown and enriched white forms, rice has no cholesterol, sodium, or gluten. It's also low in calories and fat, contains no trans fats, and is a great source of complex carbohydrates.
- Brown rice provides a nutty flavor when served by itself, and it picks up extra flavor by absorbing nearby sauces and gravies.
- Whole-grain rice stays fresh for about 6 months and can be refrigerated for longer shelf life. Enriched white rice can be kept much longer. Both enriched white and whole-grain rice are available in fluffy long-grain, tender medium-grain, and springy short-grain varieties.

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grain foods daily, more for males ages 14-50. For many, 1 cup of brown rice provides two-thirds of the minimum recommended daily amount of whole grains.

When only the nonedible hull surrounding a rice kernel has been removed, this edible whole grain is commonly called “brown rice.”

White rice, which is also healthful, is brown rice that has been completely milled and “polished,” removing the brown bran layer. Almost all U.S. white rice is then enriched with powdered nutrients, so it ends up with nearly the same nutrient content as brown rice, except for the fiber.

White rice, like all enriched grains, is also fortified with folic acid to help reduce birth defects. White or brown rice can be ground to make rice flour.

Rice’s Starch and Protein Power

Starches, including rice starches, are long, complex chains of simple sugars, which is why they are often called “complex carbohydrates.” Scientists at the FPSQ unit have been studying “resistant starch,” a rice starch that is considered a form of dietary fiber. “By reaching the large intestine intact, resistant starches do not turn into sugar and cause no sugar rise,” says Champagne.

The unit is also assessing “slowly digested starches,” which are also “rice carbs,” that lead to a more gradual rise in blood sugar levels than rapidly digestible starches. Whole-grain rice contains both resistant and slowly digestible starches.

Champagne and Banville assembled several experts on these starches for the 2009 workshop, “Exploring the Health-Promoting Functions of Rice Starch and Protein,” including ARS chemist Ming-Hsuan Chen with the ARS Rice Research Unit in Beaumont, Texas.

“Slowly digestible and resistant rice starches hold promise due to their ability to help satisfy hunger,” says Champagne. “In the future, they may be developed into food ingredients and play a role in both delaying type II diabetes and providing other health benefits.”

Cooking Rice on the Fast Track

Processed forms of rice, such as milled white rice and par-boiled or “converted” rice, take about 15 to 20 minutes to cook because their bran is not present. But whole-grain brown rice traditionally takes up to 50 minutes to cook. That’s because the bran layers of brown rice are waxy and resist the water that is necessary for complete cooking and softening.

ARS food technologist Harmeet Guraya with the FPSQ unit developed a patented brown rice treatment that significantly reduces brown rice’s long cooking time to 20 minutes—the cooking time of white rice. “Busy consumers may no longer be discouraged from eating whole-grain brown rice because of the long cooking time,” he says.

The patented technology—and consultation on how to deploy it properly—is available to qualified licensees. Those interested in licensing the technology can obtain information from the ARS Office of Technology Transfer, Beltsville, Maryland.—By **Rosalie Marion Bliss, ARS.**

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