

## **Rice: The Foundation for Healthier Eating**

Rice is the most popular grain throughout the world. Two-thirds of the world's population rely on it for its energy, fiber and antioxidant phytonutrients, and vitamins and minerals essential for life. Stemming back over 5,000 years, the ancient cereal grain is the perfect foundation for healthier eating.

Not only is rice nutritious due to its nutrient profile, it is also highly-digestible and non-allergenic, so rice can be enjoyed by most individuals—young and old alike—and poses no risk for those who are sensitive to or intolerant of certain proteins or other components of grains. Rice is a complex carbohydrate that is naturally sodium-, gluten- and cholesterol-free, has just a trace of fat, and contains no trans fat. And, due to its mild flavor, rice also complements many other healthy foods, including vegetables, lean beef, seafood and poultry, beans and soyfoods.

What's more, a recent Iowa State University study found that people who eat rice have healthier diets, eat more fruits and vegetables, consume less added sugar and fat and are likely to have a lower body mass index than non-rice eaters. The data suggest that including rice as part of a healthy, balanced diet can be linked to overall healthier eating patterns. The data also indicate that rice eaters are more likely to eat a diet consistent with the 2005 Dietary Guidelines for Americans (1).

According to the new Dietary Guidelines and MyPyramid, enriched and whole grain foods, like enriched white rice (which is enriched with thiamin, niacin and iron and fortified with folic acid) and whole grain brown rice, are among the food groups that should form the basis for a healthy diet. (2) Specifically, the Guidelines for grains recommend that people consume 3 or more servings (a serving is defined as a one-ounce equivalent) of whole grain products per day, with the rest of the recommended grain servings coming from enriched or whole-grain foods. Each half-cup of cooked rice is equal to one ounce equivalent.

### **Here are the key factors that make rice one of the most nutritious options to eat:**

#### **Rice is Nutrient Rich**

The 2005 Dietary Guidelines for Americans recommend consumers eat more nutrient-dense choices, meaning more food choices that deliver ample vitamins and minerals in relatively low amounts of calories. Rice fits that definition of nutrient-dense. (2) Rice is a natural, wholesome grain that gets the majority of its calories (at least 85%) from complex carbohydrates. Each grain also contains 2.5 grams of highly-digestible protein and is virtually fat free. Rice is low in calories, providing 103-108 calories per half-cup cooked serving. This is about the same as a glass of milk or a piece of toast, making it a great option for consumers concerned about body weight.

Rice contributes over 15 essential nutrients to the diet, but is especially rich in B-vitamins, potassium, magnesium, selenium (brown), fiber (brown) and iron. And because it is primarily comprised of complex carbohydrates, rice has a moderate glycemic index (GI) value, which is important for individuals who are following a GI-controlled lifestyle. In addition to having a moderate GI value, the way in which rice is eaten reduces its blood sugar response even further. Since rice is rarely eaten alone, unlike bread or hot cereals, the total glycemic load of the meal becomes even more important than the GI value of a particular food. Since rice is generally eaten with vegetables, lean protein sources or beans, the glycemic load of a rice meal will generally be low.

## **Rich in Complex Carbohydrates**

Over 85 percent of the calories contained in rice come from energy-providing carbohydrates with less than one percent from fat. Carbohydrates are the key energy-supplying nutrient for the body. Without adequate carbohydrates, the body cannot supply the muscles, brain and virtually every living cell with the carbohydrate energy it needs. Research from Massachusetts Institute of Technology has found that carbohydrates play a key role in mood by regulating the production of mood-elevating neurotransmitter, serotonin, in the brain. (3, 4) Serotonin not only elevates mood, it helps control appetite as well. (3, 4) In addition, many all-natural carbohydrate-rich foods like rice are loaded with key nutrients that our bodies need, including folate and other B-vitamins, fiber, phytonutrient antioxidants that have been shown to play a role in protecting the body from heart disease, certain cancers, osteoporosis and many other conditions.

All of the major health organizations, including the National Academy of Sciences' Institute of Medicine, U.S. Department of Agriculture and Department of Health and Human Services, American Dietetic Association, American Diabetes Association and American Heart Association, recommend that the majority of one's calories come from carbohydrates. (4) Specifically, it is recommended that adults get 45 to 65 percent of their calories from carbohydrates, 20 to 35 percent from fat, and 10 to 35 percent from protein. Acceptable ranges for children are similar to those for adults. (4) A half-cup of cooked rice has 22 grams of carbohydrates (primarily complex) to help individuals meet these nutrition guidelines.

## **Brown Rice is 100% Whole Grain**

Whole grains are naturally-nutritious foods that have the entire grain intact, so they are naturally higher in fiber and phytonutrients, which may help reduce the risk of heart disease. With only the inedible hull removed, brown rice is a whole grain. 2005 Dietary Guidelines and MyPyramid recommend eating three or more servings (a serving is defined as a one-ounce equivalent) of whole grain products per day. At the highest caloric intake levels, individuals are advised to eat five or more servings of whole grains and up to five of enriched for a total of 10 grain servings. Whole grains are thought to help reduce the risk of heart disease, certain cancers and potentially aid in weight maintenance.

Whole grains have more fiber, antioxidants such as vitamin E and trace minerals compared to more refined grains. Research suggests that together the sum of the entire grain provides benefits that are greater than any of its components individually. A half-cup serving of cooked brown rice equals one serving of whole grain. Even for those following a carbohydrate-restrictive diet, like Atkins and South Beach, brown rice is recommended in their maintenance phase.

## **Rice Helps Reduce Birth Defects**

Most white rice sold in the United States is "enriched," which means that millers have added thiamin, niacin, iron and, more recently, folate to the rice to replace what was lost during processing. One of the many benefits of this enrichment process is the protective role that the B-vitamin folate may have in preventing chronic disease and birth defects.

Since 1998, the U.S. government has mandated that flour and other cereal grains be fortified with the B-vitamin folate for the prevention of neural tube defects. Enriched rice, with over 40 micrograms of folic acid per half-cup, is one of several grains that counts as a "good" source of the disease-preventing nutrient. The Centers for Disease Control (CDC) credit this fortification program in reducing the incidence of severe brain and spinal birth defects by at least 27 percent. The CDC also reports that 70 percent of spina bifida cases could be prevented if women consumed 400 micrograms folate per day prior to becoming pregnant.

## **Enriched Rice Helps Fight Heart Disease**

According to the American Heart Association, over 64 million Americans have one or more types of heart disease; it affects men and women, young and old. A recent CDC report found that the folate fortification program of enriched grain-based foods including rice is playing a role in reducing the number of deaths caused by heart disease. In the March 2004 report, the CDC states that since the folate fortification program began in 1998, the average blood folate levels among Americans doubled while the level of harmful homocysteine in the blood dropped by 14 percent. As a result, according to the CDC there have been 17,000 fewer deaths from strokes and 31,000 fewer deaths from heart attacks.

## **Rice Can Play Key Role in Weight Loss and Maintenance**

While obesity is a complex disease, the leading obesity experts around the world agree that calorie imbalance is the overriding contributor to the increased incidence of overweight and obese people in the United States and most other countries. (5, 6) In countries where rice is the basis of the diet, such as in Asia, the numbers of overweight and obese people are much lower than in the United States. In addition, according to research conducted at Iowa State University, rice eaters in the U.S. consume 4.5 grams less fat (1 tsp) per day and 3.3 grams less sugar than non-rice eaters. That equals 54 calories per day which could translate to a savings of up to 5.5 pounds that could be avoided due to excess sugar and fat calories consumed over the course of a year. (1)

Making wise food choices based on the Dietary Guidelines and MyPyramid can help consumers both lose and maintain a healthy weight. However, research shows that most Americans do not follow the USDA's nutritional guidance. For example, added sugars consumption is triple the amount recommended, and whole grain consumption is less than a serving a day. (8) Grains such as rice are wise food choices. At 103-108 calories per serving (1/2 cup cooked rice), both white and brown rice are nutrient-rich carbohydrates, as well as filling and satisfying low-calorie grains. Because of its great taste and versatility, rice is an ideal partner for other low-calorie, nutritious foods like fruits, vegetables and beans.

## **Rice is Non-Allergenic**

Rice is a grain that is the most non-allergenic of all grains. A recent National Institutes of Health meeting revealed that Celiac disease may affect three million Americans. Celiac disease is a disorder characterized by a chronic inflammation of the lining of the gastrointestinal tract when exposed to gluten found in wheat, barley and rye. The cornerstone of treatment for individuals with Celiac disease is to follow a life-long gluten-free diet. Rice is gluten-free and can be an important staple in the diets of individuals with gluten sensitivity.

## **Rice Protein**

Dietary proteins provide 20 amino acids that are necessary to build and maintain tissues, produce enzymes and hormones that control main metabolic functions, immune system antibodies and our genetic makeup. There are two types of amino acids: essential and nonessential. Essential amino acids, of which there are nine, cannot be manufactured by the body, and therefore, must be consumed in the diet. Most meats and animal-based proteins contain essential amino acids, while grains are often lacking in one or more essential amino acids. However, rice protein is unique when compared to other grains because it contains all nine essential amino acids.

Various methods are used to determine the digestibility of proteins, and rice protein scores higher than many other grains in protein digestibility. According to a World Health Organization report, eggs, milk, cheese and peanut butter have a relative protein digestibility score of 100, which means that the protein in these foods is readily digestible and usable by the body. Milled rice has a

score of 93, which is higher than most other plant-based foods. Beans have a score of 82 while soy flour, wheat and oatmeal score 90. (9)

Choosing protein sources that are high-quality and easily digestible is especially important for infants and growing children, individuals with chronic diseases, and the elderly.

### Rice Varieties and Key Nutrients in a Half-cup Serving of Cooked Rice

Nutrient	Brown	Brown Parboiled	Enriched White	Enriched Parboiled	Precooked White
<b>Calories g</b>	<b>108</b>	<b>85</b>	<b>103</b>	<b>97</b>	<b>81</b>
<b>Protein g</b>	<b>2.5</b>	<b>1</b>	<b>2</b>	<b>2.3</b>	<b>1.7</b>
<b>Carbohydrate g</b>	<b>22</b>	<b>18</b>	<b>22</b>	<b>21</b>	<b>18</b>
<b>Fat g</b>	<b>1</b>	<b>.5</b>	<b>.2</b>	<b>.3</b>	<b>.1</b>
<b>Fiber g</b>	<b>1.8</b>	<b>2</b>	<b>.3</b>	<b>.7</b>	<b>.5</b>
<b>Sodium mg</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Iron mg</b>	<b>.41</b>	<b>.4</b>	<b>.95</b>	<b>1.4</b>	<b>.52</b>
<b>Folate mcgs</b>	<b>4.0</b>	<b>20</b>	<b>46</b>	<b>64</b>	<b>33.8</b>
<b>Thiamin mg</b>	<b>.094</b>	<b>.08</b>	<b>.129</b>	<b>.167</b>	<b>.06</b>
<b>Niacin mg</b>	<b>1.5</b>	<b>1.55</b>	<b>1.166</b>	<b>1.2</b>	<b>.73</b>

\*U.S. Department of Agriculture Research Service. USDA Nutrient Database for Standard Reference, Release 16-1, 2004. <http://nal.usda.gov/fnic/foodcomp>

#### References:

1. Betres-Marquez SP, Jensen HH, Upton JL. Trends in Rice Consumption and Contribution of Rice to the Total Diet of Americans. Abstract presented at Texas Dietetic Association Meeting, Apr 2005.
2. US Dept of Agriculture and Dept of Health and Human Services. Dietary Guidelines for Americans 2005; [www.healthier.us.gov/dietaryguidelines](http://www.healthier.us.gov/dietaryguidelines).
3. Attenburrow M, Williams C, Odontiadis J, et al. The effect of a nutritional source of tryptophan on dieting-induced changes in brain 5 HT function. *Psychol Med* 2003; 33:1381-86.
4. Markus C, Panhuysen G, Tuiten A, et al. Does carbohydrate-rich, protein-poor food prevent a deterioration of mood and cognitive performance of stress-prone subjects when subjected to a stressful task? *J Psychiatry Neurosci* 1993; Nov: 18(5):235-44.
5. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. National Academy of Sciences, Institute of Medicine; 2002: 207-64.
6. Shick, S., Wing, R, Klem, M, et al. Persons successful at long-term weight loss and maintenance continue to consume a low calorie, low fat diet. *J Am Diet Assoc.* 1998: 98; 408-413.
7. Freedman, M, King, J and Kennedy, E. Popular Diets: A Scientific Review. *Obesity Research.* 2001; 9:1S-40S.
8. Goldberg, J, Belury, M, Elam P., et al. The Obesity Crisis: Don't Blame It on the Pyramid. *J Am Diet Assoc.* 2004; 104:141-47.
9. National Research Council, National Academy Press; Recommended Dietary Allowances 10<sup>th</sup> Edition: 1989:70.

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*The USA Rice Federation is the national advocate for all segments of the US rice industry, conducting programs to build awareness of the many attributes of rice and increasing worldwide demand for U.S. rice.*