

Rice With a Hawaiian Touch

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AS A DIETITIAN for the National Kidney Foundation of Hawaii, I have seen how rice is accompanied with almost any dish from breakfast to dinner and snacks. Rice is at the core of the local culture reflecting the many peoples that call Hawaii home. In the dietary treatment of kidney disease, white rice is favored as it is low in sodium, potassium, and phosphorus; in addition, it is a good source of energy, inexpensive, and versatile for meal planning.

The exact figure is uncertain, but there are well over 40,000 varieties of cultivated rice said to exist. According to the Rice Association, over 90,000 samples of cultivated rice and wild species are stored at the International Rice Gene Bank. Rice is an important staple for more than half the world's population.¹ The International Rice Research Institute along with the Global Rice Science Partnership coordinates, as they state, rice science for a better world. One of the goals is to develop improved rice varieties and to make rice healthier.²

Rice can be divided into basic groups including long, medium, and short grain white, as well as brown rice, yellow rice, purple, red, black, each with subtle textures, flavor, and aroma variations.³ Because there are thousands of variations, this product update will discuss class and characteristics of commonly used rice. Prepared rice mixes, often containing salt, will not be covered in this article.

Long grains are slender and typically four to five times as long as they are wide. Long grain rice cooks into fluffy, separate grains and is often used in entrées, in soups, and pilafs or as a side dish. Medium grains are wider and shorter than long grain rice. Cooked medium grains have a moister and stickier consistency than long grain rice. Medium grain rice is ideal for risottos, desserts, and puddings. Short grain rice has an almost round appearance. These varieties become noticeably starchy/sticky when cooked and are well suited for sushi, see [Table 1](#).¹

Regardless of the size, if the grain is white, it was milled to remove the husk and bran layer, which basically means

that the outermost layer of a grain of rice (the husk) is removed yielding brown rice. It is easy to see the brown rice is an earlier step in the processing of white rice. To produce white rice, the next layers underneath the husk (the bran layer and the germ) are removed, leaving mostly the starchy endosperm. The downfall for white rice is that the complete milling and polishing destroys significant percentages of vitamin B1, vitamin B3, vitamin B6, manganese, phosphorus, iron, dietary fiber, and essential fatty acids. Although by law in the United States, fully milled and polished white rice must be enriched with vitamins B1, B3, iron and fortified with folic acid.⁴ Several nutrients are lost and are not replaced in any form even with rice enrichment. A person with chronic kidney disease (CKD) might benefit from the lower amount of phosphorus provided in the white rice because a renal diet requires a strict adherence to phosphorus intake.

On the other hand, because brown rice remains with its layer of bran (the layer under the husk) and all the layers to reach the white rice; it is fully packed with lots of fiber, see [Table 2](#). Also known as whole grain rice, it has a distinctly nutty flavor. The grains remain separate when cooked, but takes longer to soften, increasing cooking time. If stored in an airtight container, brown rice will keep fresh for about 6 months; however, because brown rice still has its oil-rich germ, it is more susceptible to becoming rancid therefore should be stored in the refrigerator.²

Although there are many varieties of rice, the more common question among CKD patients is whether to use white rice or brown rice. White rice is eaten by half the world's population, it is the go to rice in most cultures that eat rice, and is much more plentiful, economical, and easier to find in the supermarket than brown or wild rice. According to studies, servings of rice greater than three to four times a week may increase the risk of type 2 diabetes.⁵ A recent meta-analysis has shown that despite the risk of diabetes with white rice intake, there is not an increase in cardiovascular risk.^{5,6} In contrast, brown rice has a healthy connotation and has been touted to aid in lowering cholesterol, have cardiovascular benefits, to lower type 2 diabetes risk, and to have a better glycemic index. Brown rice also contains phytonutrients.^{7,8}

Most people in the early stages of CKD can include all types of rice as long as they do not have any mineral imbalances or restrictions. However, for a person who needs to restrict their phosphorus, white rice or wild rice might be a better choice. It is also true there may be a place for

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Table 1. Selected Varieties of Rice and Their Use

Rice Name	Description	Size	Suitable for Cooking	Other
Arborio	Firm creamy and chewy. Blends well with other flavors.	Short grain	Italian Risotto	Its texture is due to its higher amylopectin starch content
Basmati	Aromatic rice. Soft and slightly sticky texture	Long grain	Indian cuisine	Spices used in Indian cooking enhance aromatic properties
Brown rice	Unpolished rice with chewy texture and nutty flavor light brown in color due to the unprocessed bran layer	Long and medium grains	Side dish in most meals can be used in place of white rice	Shorter shelf life because of the natural oils retained due to its whole form and preserved natural nutrients. Longer cooking times
Calrose	Soft, wide, moist, tender kernel that cling together when cooked. Versatile.	Medium grain	Asian descended grain than can be used in salads, sushi, and desserts such as rice puddings	Available white and whole grain
Doongara	Developed specifically to be a lower on the glycemic index than other rices does not stick and are light and fluffy	Long grain	Australian, good for fried rice	Available white and whole grain
Jasmine	Similar to white rice only slightly stickier and has a jasmine fragrance. Aromatic rice	Long grain	Thai cuisine	Available white and whole grain. Well known for its aroma
Koshihikari	White color, soft, and slightly sticky texture	Short grain	Sushi, risotto and rice desserts	Available white and whole grain
Parboiled rice	Firm and less sticky rice than regular white rice. Looks like white rice.	Mostly available as long or medium grain	Can be used in most of the same dishes as white or brown rice.	Because of its processing, it is much more nutrient dense than white rice
White rice	Polished, milled rice that has had its husk, bran, and germ removed. Fluffy and tender when cooked	Long, medium, and short	Side dish in most meals such as soups, casseroles, and puddings. Versatile.	Longer shelf life than whole grain
Wild rice	Grainy and nutty flavor, it is never milled	Dark long grain	Seasoning and flavoring other dishes can be mixed with other rices to added texture, flavor, and color	Grain harvested from grass

<http://www.adelaidenow.com.au/lifestyle/essential-cooking-101-everything-you-need-to-know-about-rice/news-story/4739fdaec096a529e1d404a9c107dc3d>.

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Table 2. Comparison of Brown Rice, Enriched White Rice, and Parboiled, Enriched White Rice

Rice	Brown	Parboiled, Enriched White	Enriched White
Portion	½ cup/101 g	½ cup/77 .5 g	½ cup/79 g
Calories	124 kcal	114 kcal	103 kcal
Protein	2.77 g	2.39 g	2.13 g
Carbohydrate	25 g	24 g	22 g
Fiber	1.6	1.9	0.3
Phosphorous	104 mg	74 mg	34 mg
Potassium	87 mg	47 mg	28 mg
Sodium	4 mg	3 mg	1 mg
Calcium	3 mg	30 mg	8 mg
B1 (thiamin)	0.18 mg	0.075 mg	0.12 mg
B3 (niacin)	2.5 mg	1.47 mg	1.16 mg
Iron	0.57 mg	0.41 mg	0.95 mg

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brown rice in the diet with careful consideration of overall intake. Recent work shows that plant-based phosphorus is absorbed at a lower rate than animal-based phosphorus containing foods such as meat. This new understanding of phosphorus absorption may even put this caution about eating brown rice to rest.⁹

Now, what is parboiled rice, also known as converted rice? Might sound like its precooked, but its not. Instead, its processed quite differently from other types of rice, yet the resulting grain is cooked and served just as you would white or brown rice. However, because of the special processing, parboiled rice is a better source of fiber, calcium, potassium, and vitamin B-6 than regular white rice, see [Table 2](#). The process for parboiled rice begins before the hull is removed. The complete grain of rice is

soaked, steamed, and dried, and then, the hull is removed to make parboiled rice. The steaming enables the rice to absorb nutrients and changes the starch so that it cooks into a firmer, less sticky dish of rice than regular white rice. The steaming does not precook the rice, so it still takes about 20 minutes to prepare. Note that it can also go by prefluffed rice.^{3,10}

Jasmine and basmati rice are considered aromatic or specialty rice. These contain a natural ingredient 2-acetyl 1-pyrroline, which is responsible for their fragrant taste and aroma. Jasmine rice (Thai Fragrant Rice) originates from Thailand. The length and slenderness of the grains suggest that they remain separate on cooking, but it differs from other long grain rices in that it has a soft and slightly sticky texture when cooked. This rice is good with Chinese and

Breakfast

- Portuguese sausage and/or Spam slices, eggs and rice is one of the most common combination plates for breakfasts in Hawaii.

Fried Rice

- It's originally a Chinese dish that consist of steamed rice that has then been "stir-fried" with eggs, vegetables and meat.

Loco Moco

- There are many variations, but the traditional loco moco consists of white rice, topped with a hamburger patty, a fried egg, and brown gravy. Variations may include chili, bacon, ham, Spam, kalua pork, linguica, teriyaki beef, teriyaki chicken, mahi-mahi, shrimp, oysters, and other meats.

Plate Lunch

- A standard plate lunch, consists of two heaping scoops of white rice, macaroni salad, and an entrée. If a plate lunch has more than one entrée is often called a *mixed plate*.

Spam Musubi

- Is a popular snack and lunch food in Hawaii composed of a slice of grilled Spam on top of a block of rice, wrapped together with nori dried seaweed in the tradition of Japanese *omusubi*. This may be prepared with salmon or tofu as well.

Sushi

- Originating from Japan, this food consists of cooked rice combined with raw seafood, vegetables and sometimes tropical fruits. Ingredients and forms of sushi presentation vary widely, but the ingredient which all sushi have in common is rice. Sushi can be prepared with either brown or white rice. It is often prepared with raw seafood or meats, but some common varieties of sushi use cooked ingredients or are vegetarian.

Figure 1. Sampling of Hawaiian meals.

Southeast Asian food.^{3,11} Basmati rice is a very long, slender-grained aromatic rice with a fragrant flavor and aroma. The grains are separate and fluffy when cooked. In Indian recipes, it is often cooked with spices to enhance the grain's aromatic properties. Brown basmati rice has a higher fiber content and an even stronger aroma than basmati white.

Hawaii is an island that has a storied history and is home to people from many rice eating cultures such as Japan, China, Korea, the Philippines, and Portugal. The food culture has adapted and assimilated to the local Hawaiian population in a give and take over time, into one polyglot Hawaiian food culture. Rice often called a scoop of rice in Hawaii, may accompany all three meals.¹² This is usually steamed white rice with or without salt, see Figure 1 for sampling of Hawaiian meals. A typical breakfast might be eggs, rice, and a few slices of Spam. As you can see although the rice might be acceptable for a kidney-specific diet, the accompaniments, such as a Hawaiian local favorite, Spam, may have lots of salt.

Perhaps, the take home point might be that rice can be served for all three meals. Why not eggs and rice for breakfast? Rice can be a substitute for higher potassium home fries (potato) and sodium-containing toast that might be served with breakfast on the Mainland.

Rice is a great food choice for person with CKD and those on dialysis. It is possible to fit all varieties of rice into the diet while keeping sodium, potassium, phosphorus, and carbohydrates in check. It is important to review portions and keep the rice choice balanced

with other foods to keep phosphorus and potassium in line with dietary recommendations.

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