

Gluten-Free (GF) Baking Gets Better with Sorghum

A Look at Changes in GF Baking over the Past Two Decades

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“The improvement in the types and combinations of gluten-free flours available, such as sorghum, has greatly improved my gluten-free baking. Now I can make gluten-free baked goods with excellent texture and flavor!”

~Jenny Rees

Gluten-free Baking in the 1990's

- Bette Hagman writes *The Gluten-free Gourmet – Living Well Without Wheat*, Henry Holt & Co. Publishing, 1990, providing people with celiac disease with practical techniques and tips for GF baking and lifestyle.
- Standard GF flour blend used: white rice flour, tapioca, corn, and potato starches.
- Xanthan gum is an essential ingredient used to bind GF baked goods. (*See box at right.*)
- Most GF mixes and recipes in GF cookbooks use a white rice GF flour blend to replace wheat flour.
- Challenges arise when baking with rice flour blends as they tend to produce dense, gritty, and crumbly baked goods.
- Warming, toasting, or grilling gluten-free rice-based baked goods increases moisture and crunch.
- Nutrition is boosted by adding brown rice, almond, and/or soy flour.
- Nutrition is improved by adding fruits, vegetables, and nuts.
- Bette Hagman includes sorghum in the “Four Flour Bean Mix” in *Gluten-free Gourmet Bakes Bread* cookbook, Henry Holt & Co., 1999 providing GF bakers with more options. (*See box at right.*)

Xanthan Gum Amounts for GF Baking Needs

- **Cookies:** 1/4 teaspoon/cup of flour
- **Pancakes and Waffles:** 1/4 teaspoon/cup of flour
- **Cakes:** 1/2 teaspoon/cup of flour
- **Muffins, Quick Breads:** 3/4 teaspoon/cup of flour
- **Bread:** 1 to 1-1/2 teaspoons/cup of flour
- **Pizza:** 2 teaspoons/cup of flour

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Bette Hagman's Four Flour Bean Mix

FORMULA – 4 cups

- 2/3 part garfava bean flour
- **1/2 part sorghum flour**
- 1 part cornstarch
- 1 part tapioca flour

Gluten-free Baking in 2000's

- People with celiac disease search for better taste, texture, and more nutrition in gluten-free products and baking.
- Still no “cup for cup” substitute for wheat flour exists, but new combinations of GF flour are created and appear in ready-made mixes and recipes.
- Ancient grains such as amaranth, teff, quinoa, Montana™ (Indian rice grass), and white food grade sorghum come on the gluten-free scene.
- Various bean and legume flours (garbanzo, fava, and pea) appear in GF flour blends as well as ground flax seed.
- Xanthan gum or guar gums are still needed to bind GF flours.

Know how. Know now.

- In 2005, Expandex[®], a modified tapioca starch, is introduced by Corn Products International to gluten-free bakers. Benefits included crisp outer crust, texture and appearance similar to wheat bread, and longer shelf-life. Also less gum can be used in the recipe.
- Carol Fenster, Ph.D. features a sorghum blend as the “cup for cup” substitute for most recipes in her massive collection, *1,000 Gluten-free Recipes*, John Wiley & Sons, Hoboken, NJ, 2008. (See box at right.)

Carol's Sorghum Blend

- 1-1/2 cups sorghum flour — 35%
- 1-1/2 cups potato starch/ cornstarch — 35%
- 1 cup tapioca flour — 30%

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Sizing Up Sorghum

- Sorghum also known as milo, grest millet, jowar, and cholam originated in Africa.
- Sorghum flour has a pale beige color, slightly nutty flavor, and dense texture.
- Baked goods containing sorghum have more volume, texture, and little crumb.
- Baked goods made from sorghum tend to stay moist longer if carefully wrapped.

Health Benefits of Sorghum

Sorghum, because of its nutritional attributes, forms an important part of the diet for many people throughout the world. Whole grain sorghum contributes the following important essential nutritional components to diets:

- **Protein.** Protein is essential for growth and maintenance of body functions. Sorghum provides 21.7 g/cup and 11.3 g/100 grams. Recommended intake is 15%-20% of daily calories.
- **Fiber.** Insoluble fiber helps promote a healthy gastrointestinal system, may aid in weight loss and some research suggests it may help prevent certain types of cancer. Soluble fiber helps lower blood cholesterol and reduces the risk of heart disease. It also slows glucose absorption and may be beneficial for persons with diabetes. High fiber means at least 5 grams fiber/serving and the recommended intake for adults is 25-35 grams/day. Sorghum contains 12.1 g/cup and 6.3 g/100 grams.
- **Iron.** Iron transports oxygen through the body and is involved with enzyme functions. Low levels of iron can lead to iron deficiency anemia. Symptoms include fatigue, irritability, shortness of breath and weakness. Recommended intake for adults is 18 mg/day (females) and 8.8 mg/day (males). Sorghum contains 8.5 mg/cup and 4.4 mg/100 grams.
- **Calcium.** While important for bone and dental health, calcium helps with several important functions in the body. It is necessary to maintain normal heartbeat, muscle, and nerve functions. Calcium is also involved in blood coagulation and many enzymatic processes. Recommended intake for adults is 1000 mg/day. Sorghum provides 54 mg/cup and 28 mg/100 grams.

Sources

- *1,000 Gluten-free Recipes*, Carol Fenster, Ph.D., John Wiley & Sons, 2008.
- Celiac Sprue Association, Inc., www.csaceliacs.org
- *The Gluten-free Gourmet, Living Well Without Wheat*, Bette Hagman, Henry Holt & Co., 1990, *Gluten-free Gourmet Bakes Bread*, Bette Hagman, Henry Holt & Co. Publishing, 1999
- USDA National Nutrient Database, <http://www.nal.usda.gov/fnic/foodcomp/search/>
- USDA National Nutrient Database for Standard Reference, Release 22, <http://www.ars.usda.gov/ba/bhnrc/ndl>