The Two Stage Process

Maximizing the Nutritional Value of Whole Grains

Just because you've switched from white flour to whole grains does not mean that you are getting all the nutritional value. In fact you may also experience new problems with digestion. That is because whole grains contain phytic acid in the bran of the grain. Phytic acid combines with key minerals, especially calcium, magnesium, copper, iron, and zinc and prevents their absorption in the intestinal tract.

Soaking, fermenting, or sprouting the grain before cooking or baking will neutralize the phytic acid, releasing these nutrients for absorption. This process allows enzymes, lactobacilli and other helpful organisms to not only neutralize the phytic acid, but also to break down complex starches, irritating tannins and difficult-to-digest proteins including gluten. For many, this may lessen their sensitivity or allergic reactions to particular grains. Everyone will benefit, nevertheless, from the release of nutrients and greater ease of digestion.

The first stage of preparation in making whole grain porridges or baked recipes, is to soak the whole grain flour in an acid medium (buttermilk, yogurt, or other cultured milk, or in water with whey, lemon juice or vinegar added—1 tablespoon per cup water). As little as 7 hours soaking will neutralize a large portion of the phytic acid in grains. Twelve to 24 hours is even better with 24 hours yielding the best results.

Brown rice, buckwheat and millet are more easily digested because they contain lower amounts of phytates than other grains, so they may be soaked for the shorter times. Other grains, particularly oats (the highest in phytates of the whole grains) is best soaked up to 24 hours.

There are two other advantages of the two-stage process. Several hours of soaking serves to soften the grain, resulting in baked goods lighter in texture, closer to the texture of white flour. The longer the soaking, the less necessary is baking powder. Baking soda, alone, will give enough rise. Secondly, this is a great step in convenience, dividing the task into two shorter time periods, cutting the time needed to prepare the recipe right before cooking and baking when you feel rushed to get food on the table.

Our blender batter baking recipes include the soaking process as a recommended option. Our preferred acid medium is buttermilk, but you can substitute an equal amount of water with whey, lemon juice or vinegar—1 tablespoon per cup—as an alternative.

We encourage you to use the two-stage option, because we suspect that many problems with whole grains would be minimized. Nutritional value and appetite appeal are enhancd. As Sally Fallon and Mary Enig, PhD point out, "...virtually all preindustrialized peoples, soaked or fermented their grains before making them into porridge, breads, cakes and casseroles." ***Nourishing Traditions*** p. 452

We recommend ***Nourishing Traditions*** as a supplemental text to our cookbooks. To order call 800.998.2783

Adapting Recipes to the Two Stage Process

Instructions to adapt recipes in the ***SueGreggCookbooks***

ALL RECIPES: .

Soak at least 7 hours: brown rice, millet, buckwheat, lentils, split peas. Soak from 12 to 24 hours: All other grains and beans (24 hours is best, especially for high gluten grains, oats and garbanzo beans).

QUICK BREADS

(waffles, pancakes, muffins, cornbread, crepes, loaf breads, etc). Blend the liquids with flour (or with grain for 1-3 minutes for blender batters); if cultured milk is not used as the liquid (such as buttermilk, yogurt or soured milk), add for each cup liquid in the recipe 1 tablespoon buttermilk, yogurt, kefir, whey, lemon juice or vinegar). Cover and let stand for the number of hours recommended above; if batter is stiff, lay plastic wrap directly over the batter to keep it from drying out. If recipe calls for sweet milk, refrigerate batter (e.g Crepes) In the second stage before baking, blend the eggs, followed by leavenings and salt; include any other ingredients not added in first stage.

YEAST BREADS

Commercial yeast does not neutralize phytates in grains adequately. The following procedure in recipes calling for commercial yeast will assist in the neutralizing process. Blend most of the flour in the recipe with the water (warmed) and 1 tablespoon vinegar per 1 cup water. Up to 6 cups flour can be added to 2 cups warm water without making the batter too stiff. Lay plastic wrap directly over top of dough to prevent drying out. Cover bowl and let stand number of hours recommended above. In the second stage, proof the yeast in very warm water with a bit of honey, the salt and 1/2 teaspoon baking soda; let stand until it bubbles up. Work remaining ingredients into the dough along with the proofed yeast. Add more flour as needed to proceed

with kneading without sticking, using either unbleached white flour or whole grain flour. Proceed with recipe instructions, allowing 1 rising in the bowl before shaping for pan rising. Rising of dough will likely take longer than stated in the recipe since the dough will be cooler to start the second stage. Use the "finger poke test" to determine if rise in the bowl is sufficient. If a finger indentation remains in the risen dough, it is a sufficient rise. See Yeast Bread Recipe Update below.

HOT CEREALS

Soak cereal grains--whole, cracked or flaked--for the number hours recommended above. Soak equal portions of warm water with uncooked grain; use half the amount of water and all the grain called for in the recipe; add 2 tablespoons yogurt, buttermilk, kefir, whey, lemon juice or vinegar to 1 cup soaking water. For the second stage, bring the other half of the water to a boil with the salt. Blend in the soaked cereal. Reduce heat to simmer, cover and cook 5 minutes or longer until consistency desired is reached. For extra nutritional value, stir in 1 tablespoon ground flax seeds. All hot cereal recipes in ***Breakfasts*** can easily be adapted to this method.

BROWN RICE

Soak the rice in the full amount of warm water overnight or 7 hours, adding 1 tablespoon yogurt, buttermilk, kefir, whey, lemon juice or vinegar per 1 cup water. Add the salt just before cooking.

PREPARATION OF DRY BEANS

Presoak the beans before using in recipes. Wash beans and cover with at least twice the amount of water as beans. Add 2 tablespoons lemon juice or whey per 2 cups beans. Soak for number hours recommended above. Drain, rinse and follow the recipe, starting with fresh water (exception: Lentil Rice Casserole--do not change water).

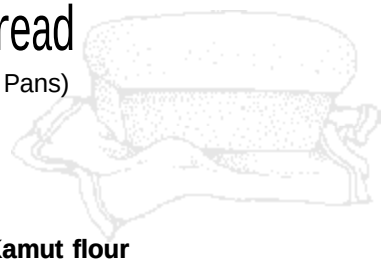
All grain and bean recipes included in our ***Busy Woman's Guide to Healthy Eating CD*** include the two-stage process. The two-stage process has also been incorporated into key recipes in ***Breakfasts***. However, we recommend the soaking time be increased to 12 to 24 hours except for brown rice, millet and buckwheat recipes.

Yeast Bread Recipe Update

The recipe on the next page replaces the following recipes in our books:

Baking with Whole Grains, *Delicious Whole Grain Dough,* p. D38
Breakfasts, *Spelt Bread* or *Kamut Bread,* pp. 122-123
Soups & Muffins, *Delicious Whole Grain Dough*, p. 96
Lunches & Snacks*, My Whole Wheat Bread!,* p. 86
Yeast Breads*, Delicious or Traditional Whole Dough, Spelt or Kamut Bread,* pp. 20, 21, 26, 27

Delicious Whole Grain Bread



AMOUNT: 2 Medium Loaves (8½" x 4½" Pans)
Bake: 350ºF - 35 to 45 minutes

1.Blend well in mixing bowl:

2 cups warm water
2 tablespoons apple cider vinegar
6 cups whole wheat flour, spelt or Kamut flour

2. Lay plastic wrap over top of dough to prevent it drying out. Cover bowl with damp cloth. Let stand 12-24 hours.

3. Blend in a glass or plastic liquid measuring cup in order give and allow to stand 5-10 minutes until it bubbles up:

¼ cup very warm (but not hot) **water,**
2 teaspoons (1 package) **active dry yeast**
½ teaspoon honey
½ teaspoon baking soda

4. Thoroughly whisk together oil or butter, honey and salt in a 1 or 2 cup liquid measuring cup and work into dough with yeast mixture until well blended:

⅓ cup coconut oil, olive oil or melted butter
⅓ cup honey
2 teaspoon salt, proofed yeast mixture (from step #3)

5. Knead 20 minutes or 600-800 strokes, starting in the bowl (See machine kneading variation below). Add a little **unbleached white flour**, as needed to handle dough easily enough to start kneading outside the bowl. Turn it out onto floured surface to continue kneading, adding just enough flour to prevent sticking (1 - 1 1/2 cups more flour is usually sufficient). Knead until smooth and resistant to kneading action.

6. Complete recipe according to cookbook instructions for the particular recipe from the list above that you are following, but allow two risings in the bowl. Risings may take a little longer than given in cookbook recipes. Use the “poke” test--if a finger indentation remains in the risen dough, it is ready to be deflated and allowed to rise again. Shape, let rise almost double in pans; bake 350 degrees, 35-45 min.

MACHINE KNEADING Knead for the length of time appropriate for your kneading machine and the type of flour you are using. Consult the dealer from whom you purchased the machine for assistance, if needed. In a Bosch machine knead whole wheat about 8 minutes, Kamut about 6 minutes and Spelt about 4 minutes on medium speed.

Three Ways to Apply
The Two Stage Process to Yeast Breads

1) Soaking Method

This is the methbod used in The Delicious Whole Grain **Bread recipe on the back page of***Talking Food Pages*, "The Two Stage Process"

Since commercial yeast does not adequately neutralize phytic acid to release nutrients, we soak the major portion of whole grain flour for 12 – 24 hours in warm water with an acid medium such as vinegar, lemon juice, whey; or these may be replace with a cultured milk for all the liquid such as buttermilk.

In the second stage, we use unbleached white flour, or preferably flour milled from sprouted grain.

2) Sprouted Flour Method

This recipe is presented in our *Talking Food Pages*, "Sprouted Breads" posted on our website.

Since sprouting the grain adequately neutralizes phytic acid to release nutrients, the standard recipe already in our books may be used. In other words, it is not necessary to soak any flour. The recipe may be completed from start to finish in one continuous operation.

3) Fermentation Method (Sourdough)

Our sourdough starter and sourdough bread recipes are found in *Breakfasts and in Yeast Breads*.

Since sourdough is a combination of several strains of bacteria drawn from the air, it is adequate to neutralize phyic acid to release nutrients by fermentation of yeast alone. No prior soaking with an acid meeting is needed.

Sourdough starter is added with liquid and flour the night before in what is called the "sponge" method. The recipe is then completed in the same way as other methods. Sprouted flour does not need to be used.

We recommend at least two risings of the dough in the bowl for any recipe by any method. This will give do some of the important work of neutralizing phytic acid, improve the lightness of texture and improve the flavor.

Evaluating the Importance of the Two-Stage Process

While the whole truth is probably not yet known (recall *Proverbs 25:2*), phytates are not all bad. Research shows that they may be involved in curbing free radicals in the body that contribute to heart disease and cancers, as well as preventing excessive mineral build up in the body, especially of iron, which also contributes to free radical formation. It is thought that it may be the phytates in the bran layers of whole grains, in legumes, and in nuts and seeds that are providing these protections. Thus, the inclusion of these foods in the diet over against a diet that relies primarily on white flour products and on a high proportion of fiberless meats and dairy products becomes a further plus. The value of phytates, on the other hand, does not warrant ignoring the value of the two-stage process. First of all, neutralizing phytic acid to release nutrients bound up in the form of phytates is not 100% accomplished except under ideal conditions of temperature and pH. Attempting to control these conditions, at least in home baking, is not a worthwhile endeavor beyond inclusion of an acid medium and room temperature for a suggested range of time, or the practice of making sourdough or sprouted breads. Second, taking a realistic view of our habits is useful. Home baking not withstanding, commercial whole grain products not processed adequately will find their way to our tables (as whole grain pastas, e.g.). Third, the health of many focuses on lack of essential minerals and difficulty with the digestion of gluten in grains.

Kaayla T. Daniel, PhD, CNN, author of *The Whole Soy Story*, points to the Hebrews as an example of consuming both leavened and unleavened bread. The former, which was produced through the fermentation process from wild yeasts was practiced most of the time. The latter, unleavened bread, was part of the the Hebrew preparation for Passover in early spring, "a natural time for fasting, a practice that encourages detoxification." Daniel suggests that these yearly short periods "might have been a very effective way to rid the body of any heavy metals through the action of phytic acid." On the other hand, Daniel reminds us that "Decades of research on the phytates of real foods have shown that phytates are antinutrients—more likely to contribute to disease than prevent it."[1]

To conclude, I suggest that occasional consumption of whole grains that are not processed by one of the three two-stage methods (soaking, fermenting, sprouting) is not likely detrimental to health[2] and may contribute a plus, while those that are properly processed as the main dietary choice will be beneficial to health.

[1] *The Whole Soy Story*, by Kaayla T. Daniel, PhD, CNN, Chapter 17, "Phytates ties that bind," pp. 221, 224, quotes by permission. [2] However, to many gluten-sensitive and grain-allergic persons, the two-stage process may be beneficial on a basically consistent basis.