

# SPELT FOR HUMAN HEALTH AND NUTRITION

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## Introduction

Spelt, *Triticum aestivum* subspecies *spelta*, is very closely related to wheat and is sometimes referred to as a 'covered wheat' because the kernels do not thresh free of the hull (Figure 1). Spelt was commonly grown in ancient times (more than 6,000 years ago) throughout the Near East and Europe and was used for baking. Modern varieties of wheat are easier to thresh than spelt, and replaced spelt in the early 1900s. Spelt production declined dramatically in the 20th century (Abdel et al. 1995). Today, there is new interest in spelt among people who are looking for alternative foods, heirloom varieties, or certified organic grain products (Campbell 1997).

Spelt is primarily grown in Europe, the U.S., and Canada for bread flour, and has a flavor and texture very similar to wheat. Bread made from 100% spelt flour has a heavier, denser texture than bread made from white or bleached wheat flour. Spelt flour is also used to make pasta, cold and hot cereals, and baking mixes. Today, all of these spelt products can be found in natural foods stores or large supermarkets. This publication answers some common questions that consumers may have regarding whether or not spelt can be used as an alternative to wheat and also provides nutritional and cooking information on spelt.



**Figure 1. Heads of hard red wheat (left) and spelt and spelt kernels (right) with hull intact (top) and hull removed (bottom).**

## Spelt as an Alternative to Modern Wheat

There are a number of issues to consider when deciding whether to use spelt in place of wheat, including:

- **Availability and Cost.** Spelt is commonly found in natural food stores or specialty markets, and is becoming available in general grocery stores. It is typically more expensive than regular wheat.
- **Desired Texture and Recipe Adaptability.** Many spelt varieties have not been bred for improved baking properties. Baked goods made from these unimproved spelt varieties tend to be heavier than products that are made from white wheat flour.
- **Health Concerns.** People with gluten intolerance and wheat allergies may wonder whether spelt can be safely consumed as an alternative to wheat. If you think you may have one of these conditions and are considering spelt, consult your health-care provider first. Additional information is provided in this publication.

## Gluten Intolerance and Spelt

Gluten intolerance (also known as celiac disease, celiac sprue, or gluten-sensitive enteropathy) is a disease in which people cannot consume gluten without serious health consequences. Gluten is the protein in wheat, spelt, and several other grains. In gluten intolerance, the gliadin portion of gluten binds to the lining of the intestines, where it causes serious damage. Gluten intolerance usually comes on slowly. Over time, it causes increasing intestinal damage. As damage increases, absorption of nutrients is radically diminished, often leaving the individual malnourished, sickly, and progressively weaker. Symptoms of gluten intolerance usually include diarrhea, bloating, cramping, and may include an increase in appetite with concurrent weight loss, weakness, fatigue, and iron deficiency anemia. If the disease goes unchecked for years, osteomalacia (bone softening due to vitamin D deficiency) may also occur (Mahan and Es-cott-Stump 2002). Babies may experience diarrhea and growth failure before the condition is diag-

nosed. The *only* way to diagnose gluten intolerance is through a biopsy of the intestinal tract. Gluten intolerance is never out-grown and people who are gluten intolerant must avoid gluten throughout their life-time. While the intestinal damage caused by gluten can be reversed if the disease is caught in time, repeatedly going on and off a gluten-free diet can lead to irreversible damage.

People with gluten intolerance sometimes wonder if spelt can be used as a substitute for wheat. Since spelt contains gluten, people with gluten intolerance cannot eat spelt. They also cannot eat other grains and grain products that contain gluten, such as wheat, rye, barley, triticale, kamut, and farina.

## **Grains Without Gluten**

Acceptable grains and starches for people with

### Information on Gluten Intolerance

If you think you may be gluten intolerant, talk with your health-care provider and seek the services of a dietitian. It can be difficult to plan gluten-free meals and to learn all the hidden sources of gluten. The Gluten Intolerance Group of North America and the Celiac Disease Foundation have information on gluten intolerance.

- Gluten Intolerance Group of North America  
15510-10 Ave., Suite A  
Burien, WA 98166  
Tel: (206) 246-6652  
Internet: <http://www.gluten.net/>
- Gluten Intolerance Group of Washington  
31214 124th Ave SE  
Auburn, WA 98092  
Phone: (253) 833-6655  
Fax: (253) 833-6675  
Email: [CustomerService@gluten.net](mailto:CustomerService@gluten.net)  
<http://www.gluten.net/state/washington/>
- Celiac Disease Foundation  
20350 Ventura Blvd Ste 240  
Woodland Hills CA 91364  
Phone: (818) 716-1513  
Fax: (818) 267-5577  
Internet: <http://www.celiac.org/>

gluten intolerance include corn, rice, oats, potato starch, millet, buckwheat (not related to wheat), tapioca, sorghum, arrowroot, soy, and nut flours.

## **Wheat Allergies and Spelt**

Some people who are allergic to wheat question whether they can eat spelt-containing foods. Unfortunately, spelt is so similar to wheat that it cannot be recommended for people with allergies to wheat. Wheat is one of the most common food allergies and symptoms may include diarrhea, skin rashes, itching, runny nose, asthma, wheezing, headaches, or changes in mental outlook. These symptoms may be mild to severe. To diagnosis wheat allergy, it is necessary to review a person's medical history and skin test or RAST results, and to conduct an elimination diet. Seek the services of a health-care provider to conduct and monitor these tests. Testing may determine that spelt is suitable for some individuals, even if they are allergic to wheat.

Individuals who have wheat allergies do not experience damage to their intestinal tract in the same way as people who are intolerant to gluten. While gluten intolerance lasts a lifetime,

### **Information on Food Allergies**

- The Food Allergy and Anaphylaxis Network  
7925 Jones Branch Drive, Suite 1100  
McLean, VA 22102  
Toll-Free: 800-929-4040  
Main: 703-691-3179  
Fax: 703-691-2713
- FARE Western Regional Office  
5855 Green Valley Circle, Suite 214  
Culver City, CA 90230  
(Regional Director, West)  
310-883-8644  
Link to Western Regional Office  
(includes Alaska, Arizona, California,  
Hawaii, Idaho, Montana, Nevada, Oregon,  
Utah, Washington, and Wyoming):  
<http://www.foodallergy.org/western>



**Products made from spelt flour.**

wheat allergy may be outgrown after a period of abstinence. A person with wheat allergy needs to work with his or her health-care provider to determine if and when foods containing gluten can be reintroduced. However, anyone trying an allergenic food after a period of avoidance needs to use extreme caution. If the allergy is still present, the reaction may be severe. It is also important to note that not all spelt products are the same. For instance, if spelt is grown in fields next to wheat, cross pollination may occur and result in a spelt crop that has wheat properties which could cause an allergic reaction. Additionally, if spelt is processed in a facility that also processes wheat, there are opportunities for cross contamination. Therefore, a person's response to spelt can vary from product to product.

### **Nutritional Value of Spelt**

There are numerous varieties of spelt and the nutritional analysis of each appears to be affected by the environmental conditions in which it is grown (Grela 1996). Overall, the nutritional value of spelt is very similar to modern-day wheat, but spelt has considerably more riboflavin and niacin than wheat. Table 1 presents a comparison of nutritional analyses of whole wheat and spelt flours.

**Table 1. Nutritional comparison between 1 serving (38 g) of common whole wheat and spelt flours, where 38 g is equivalent to the amount of flour in 1 slice of bread (from Food Processor Version 7.5, 2000).**

**Whole Grain Wheat Flour**

Calories	140.83
Protein	5.42 g
Carbohydrates	27.08 g
Dietary Fiber	4.33 g
Other Carbohydrates	22.75 g
Fat—Total	0.54 g
Mono Fat	— g
Poly Fat	— g
Saturated Fat	0 g
Water	3.91 g

**Vitamins**

Thiamin-B1	0.16 mg
Riboflavin-B2	0.07 mg
Niacin-B3	1.73 mg
Niacin Equiv.	1.73 mg

**Minerals**

Calcium	21.67 mg
Copper	— mg
Iron	1.17 mg
Manganese	— mg
Potassium	140.83 mg
Zinc	— mg

**Whole Grain Spelt Flour**

Calories	126.00
Protein	5.04 g
Carbohydrates	26.46 g
Dietary Fiber	2.52 g
Other Carbohydrates	23.94 g
Fat—Total	1.26 g
Mono Fat	0.28 g
Poly Fat	0.98 g
Saturated Fat	0 g
Water	4.32 g

**Vitamins**

Thiamin-B1	0.25 mg
Riboflavin-B2	0.87 mg
Niacin-B3	3.20 mg
Niacin Equiv.	4.33 mg

**Minerals**

Calcium	0 mg
Copper	0.23 mg
Iron	1.36 mg
Manganese	0.83 mg
Potassium	145.53 mg
Zinc	1.29 mg

## Using Spelt

The following are some ideas and suggestions for cooking spelt. For a more complete guide to how to cook with spelt, we suggest *The Spelt Cookbook* (Hughes 1995).

### Whole Spelt Kernels

To use whole spelt kernels (also called berries or groats), bring 6 cups of water or broth to a boil then add 2 1/2 cups of spelt berries. Simmer for about 75 minutes. To shorten the cooking time, soak spelt berries (use 3 cups of water for each cup of berries) for several hours or overnight,

then drain. Add fresh water in the amount stated above and cook for about 45–60 minutes until chewy but tender. To cook in a pressure cooker, use the same ratio of spelt and water, but reduce cooking time to about 30 minutes. If salt is desired, add it after the spelt is cooked. One cup of raw spelt yields about 2 1/4 cups cooked. Add cooked spelt to soups or grain-based salads or use as a side dish like rice.

### Rolled or Flaked Spelt

Rolled and flaked spelt cooks much faster than whole kernels. Pour boiling water over spelt flakes and let stand for about 10 minutes or until



### Savory Spelt Flakes

*A flavorful change from rice*

- 1 cup spelt flakes
- 2 cups water
- 1/2 teaspoon salt
- Black pepper
- Olive oil

Toast the flakes in a dry skillet, shaking frequently until fragrant. In a saucepan, boil 2 cups of water with 1/2 teaspoon of salt. Add toasted spelt flakes. Cover and cook over low heat for 5 minutes. Turn off heat and let stand 5 minutes. Fluff with a fork. Add pepper and olive oil to taste.

~Adapted from Deborah Madison's *Vegetarian Cooking for Everyone*.



tender. Use 1 cup rolled or flaked spelt to 2 cups of water. Spelt flakes can be used as a hot breakfast cereal—just add sweetener and raisins—or season with salt, pepper, and olive oil to make a dish that can be used like rice.

### Spelt Flour

White, all-purpose (unbleached), and whole grain spelt flours are available. Just as with common wheat flour, white spelt flour has the bran and germ removed and whole grain flour has the bran and germ included. When using spelt flour to replace regular wheat flour, experiment to get the texture you desire. You may substitute spelt flour for wheat flour and either decrease the liquid by  $\frac{1}{4}$  cup or add  $\frac{1}{4}$  cup more flour (Steep Hill 2004).

### References

- Abdel, E.-SM, P. Hucl, and F. W. Sosulski. 1995. Compositional and Nutritional Characteristics of Spring Einkorn and Spelt Wheats. *Cereal Chemistry*. 72(6):621–24.
- Campbell, K. G. 1997. Spelt: Agronomy, Genetics, and Breeding. *Plant Breeding Reviews*, Ed. J. Janick. Vol. 15, J. Wiley & Sons. P. 187–213.
- Food Processor Version 7.50. June 2000. ESHA Research, Salem, OR.
- Forage Information System, Oregon State University. April 2004. <http://forages.oregon-state.edu/>
- Gluten Intolerance Group. April 2004. <http://www.gluten.net/diet.asp>
- Grela, E. R. 1996. Nutrient Composition and Content of Antinutritional Factors in Spelt (*Triticum spelta* L) Cultivars. *J. Sci. Food Agric*: 71:399–404.
- Health Archives Glossary. April 2004. <http://www.2020tech.com/health/glossary.html>
- Hughes, H. 1995. *The Spelt Cookbook: Cooking With Nature's Grain for Life*. Avery-Penguin Putnam Publishing Inc., NY.
- Madison, D. 1997. *Vegetarian Cooking for Everyone*. Broadway Books, NY.
- Mahan, L. K., and S. Escott-Stump. 1999. *Krause's Food, Nutrition and Diet Therapy, 10th ed.*, W. B. Saunders Co., Philadelphia.
- Steep Hill Food Co-op. April 2004. Spelt recipes. <http://www.sfn.saskatoon.sk.ca/business/steephill/speltrec.html>

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