

# Barley Basics

## [Economic Significance of Barley in the U.S.](#)

Barley is the world's oldest grain, as evidenced by discoveries in ancient cities in the Mideast and North Africa. It has been cultivated for about 8,000 years, and today is the world's fourth largest cereal crop. Barley as a food is most commonly identified as pearl barley, traditionally used in soups. Pearl barley has many other food uses, such as casseroles, pilafs or salads. Barley flour and milling fractions such as bran, middlings, shorts and "red dog," can also be used for baked products and breakfast cereals.

There are many genotypes of barley, exhibiting a wide range of physiological and morphological characteristics that somewhat determine the end use. A major factor affecting total dietary fiber in barley is the nude gene (nn) which controls the adherence or non-adherence of the hull to the kernel. Thus, this separates all barleys into one of the following types:

1. covered, or having a hull that adheres tightly to the kernel;
2. hull-less, sometimes called "nude," because the hull falls off the kernel, as with wheat, during harvesting.

Most common barleys are of the covered type because of increased yield due to the presence of the hull and demand for this type in malting. However, there is growing interest in the hull-less type, which is very adaptable for human food products because the entire grain can be used without pearling.

There is an additional genetic property in some cultivars, waxy starch, which means the starch is almost 100% amylopectin. The combination of hull-less and waxy characteristics produces barleys which are very high in soluble dietary fiber, especially beta-glucans.

Covered barley must be processed to remove the hull. Blocking is the first stage of processing, where only the major part of the hull is removed. Barley that is blocked can then be steam rolled, cut into grits, pearled, ground into a meal, or roller milled similarly to wheat.

Nutritionally, hull-less or pearl barley is not too different from wheat in its caloric, protein, vitamin and mineral content. As in wheat, there are high protein varieties. Barley differs from wheat, however, in that there are some varieties high in lysine, the essential amino acid that is most limiting in cereals. Barley is very high in dietary fiber, particularly the soluble fiber portion. The soluble portion contains beta-glucans, the same compound found in oats that has been shown to lower serum cholesterol. Arabinoxylan or pentosans are also found in barley and constitute about one-half of the soluble fiber. Barley also contains tocotrienol, an

oil component which has cholesterol-lowering activity.

Barley can be milled into flour and other milling fractions, some of which have a higher concentration of dietary fiber than the whole grain. These high-fiber milling fractions have many uses, with important healthful benefits.

The barley shorts fraction contains about 18% total dietary fiber, which is approximately 50% soluble fiber. Compare this with white wheat flour, which contains only 3% total dietary fiber, including 1% soluble fiber. Flour in any recipe can be supplemented with whole barley flour or a milling fraction such as shorts to increase fiber.

More on the fiber-cholesterol connection?

Studies at Montana State University, Bozeman, MT, have shown that barley, rich in beta-glucan, a form of soluble fiber, is an effective cholesterol-lowering food. Certain varieties of barley have been found to be more effective in lowering serum cholesterol. Waxy hull-less barley, with its higher beta-glucan content, seems to be one of the most effective varieties in lowering serum cholesterol.

Research on barley milling fractions such as barley bran has shown these products to be effective in lowering serum cholesterol. Beta-glucans and other fiber components found in milled barley products are more concentrated than those found in whole grain barley, making the milling fractions extremely effective in lowering cholesterol. These studies have given barley milling fractions a bright future as a high fiber commercial ingredient.

By-products of malting barley used for brewing beer have also been identified as viable human food sources. These "spent grains" are rich in insoluble fiber and possess important cancer preventative properties.

Consumers may purchase barley in several forms. Pearl Barley is sold in most supermarkets. Barley flour, flakes and grits may be found in health food and specialty stores. Barley is also used as a commercial ingredient in prepared foods such as breakfast cereals, soups, pilaf mixes, breads, cookies, crackers and snack bars.

### Nutritional Analysis

Serving Size: 1 cup cooked pearly barley

Calories - 193

Protein - 3.5 grams

Fat - 0.7 gram

Cholesterol - 0

Carbohydrate - 44.3 grams

Dietary Fiber - 9 grams

Calcium - 17 mg

Iron - 2 mg

Magnesium - 35 mg

Phosphorus - 85 mg

Potassium - 145 mg

Sodium - 5 mg

Zinc - 1.2 mg  
Niacin - 3.2 mg

Folic Acid - 26mcg

Source: USDA Agricultural Handbook No. 8-20 Composition of Foods

For more nutritional information see the following USDA Food and Nutrition Information (FNIC) website: [www.nal.usda.gov/fnic](http://www.nal.usda.gov/fnic)

This USDA Nutrient Database allows the user to search for the nutritional content of specific food items. The user can view the nutritional content of raw to processed foods. Specific brands and products can be viewed such as "Kellogg's Frosted Mini-Wheats". Barley information is available for processed and un-processed items. The various classes of wheat are also available.

This material provided by Montana State University and the National Barley Foods Council, for more information contact:

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