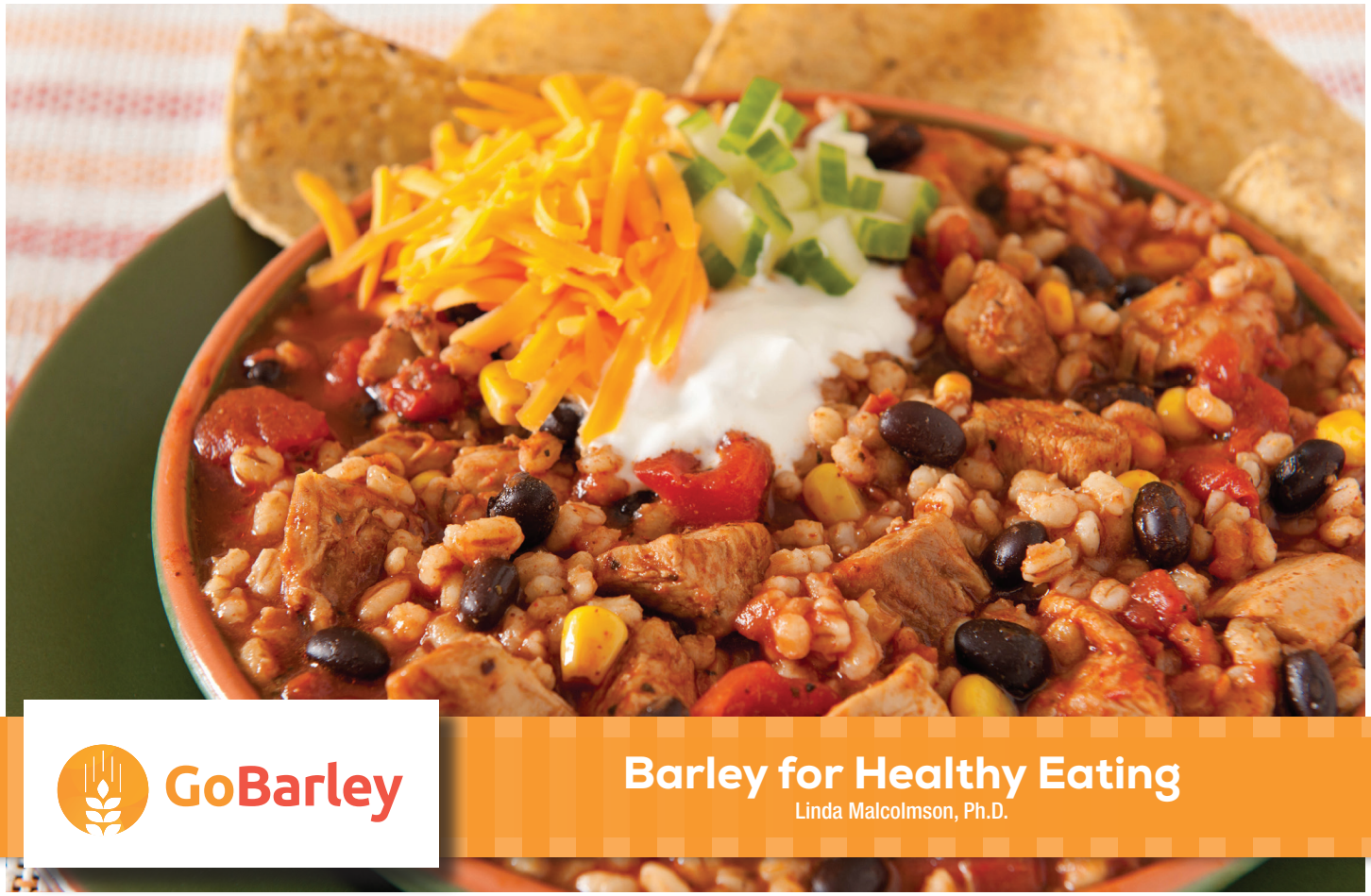

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Barley for Healthy Eating

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Barley is an Ancient Grain

Barley was an important cereal grain in ancient civilizations. It was also an important food grain among working-class people in Europe until the end of the 19th century, when other grains such as wheat, rye and oats became more abundant, replacing barley in the diet. Throughout historical and archaeological reports, barley is referred to as a source of health, strength and stamina for athletes and manual laborers. The health benefits and medical aspects of barley foods are also referred to in ancient Arabic, Chinese, Egyptian, Ethiopian and Greek literature, and have been reported by more recent civilizations from Asia to Europe[1]. Barley was the food of the Roman gladiators, who were called hordearii or "barley men." It was believed that barley bread gave the gladiators greater strength and stamina compared with other foods.[2] As other grains became more abundant, barley became less important as a food grain and was relegated to the status of a "poor man's bread"[3].

There are countries where barley remains an important food staple including Tibet, Korea, Mongolia, and many African and Asian countries[4]. For example, Morocco has the highest per-capita consumption of food barley, where it is incorporated into soups, bread and porridge[5]. In Japan, barley is used to produce miso, tea and shochu, and is used as a rice extender[5]. Barley is available in North America as pot and pearl barley, barley flour, flakes or grits.

Barley is an ancient cereal grain that offers not only versatility but a high nutritional profile. Barley is an excellent source of β-glucan soluble fibre, which helps to reduce cholesterol, a risk factor for heart disease. Barley is also an important source of protein, insoluble fibre, vitamins and minerals.

Nutrient Composition and Health Benefits Of Barley

Barley is similar to other cereal grains in terms of caloric value and protein content, but contains higher levels of β-glucan soluble fibre than other cereal grains (wheat and rye), with the exception of oats. There is strong evidence that barley β-glucans can lower blood cholesterol levels, thereby reducing the risk of coronary heart disease. Both Canada and the U.S. allow manufacturers to make a heart-health claim for foods containing barley. The food must have at least 0.75 grams of β-glucan soluble fibre per serving in the U.S.[6], and one gram in Canada[7], to make the claim. Research has also shown that barley β-glucans lower blood glucose levels, which is important in the prevention and management of type 2 diabetes[8] and increases satiety, which aids in weight management[9].

Besides its high level of β-glucan soluble fibre, barley is an excellent source of insoluble fibre important in maintaining digestive health and protecting against colon cancer[10]. Barley also has high levels of tocotrienols, phenolic compounds and lignans, which have been shown to reduce the risk of coronary heart disease, diabetes and certain cancers. Barley is a good source of many essential vitamins and minerals including thiamin, niacin, folate, riboflavin, iron, phosphorus, magnesium, zinc and selenium—all of which are important in maintaining good health. Barley contains similar levels of fat to other cereal grains, with the exception of oats, which has higher levels than all other cereal grains[11].

The most common method of processing hulled barley involves the gradual removal of the outer tissues of the kernel by abrasion—a process referred to as pearling. Through this process, the tough, fibrous and largely indigestible hull is removed along with the bran layer and germ. As a result, pot and pearl barley are not considered whole-grains but they are still high in β-glucans making them a healthy choice. Products that are whole-grain include barley flakes, grits and flour, provided the bran and germ have not been removed in the milling process. Recent research suggests that whole grains can reduce cholesterol levels and the risk of heart disease[7]. Studies have also shown that whole grains appear to play an important role in reducing the risk of type 2 diabetes and certain cancers[12]. Whole grains are important to overall bowel health by supporting the growth of healthy bacteria in the gut and promoting regularity[12].

Canadian Barley Production

Barley ranks fourth among the major cereal grains in terms of world production after maize, wheat and rice. Europe is the largest producer of barley, followed by North America, Asia, Oceania and Africa. Within North America, Canada is the largest producer of barley, producing just over eight million tonnes in 2012[13], with Alberta producing approximately half of Canada's annual crop.

Canada grows both hulled and hulless barley. Hulless barley has a weaker attachment of the hull to the seed kernel than regular or hulled barley, allowing for the hull to be removed during harvesting and eliminating the need to remove the hull prior to processing the grain. This is particularly beneficial in the production of barley flour.

Canada is a leader in the development of hulless barley varieties, some of which have different starch characteristics due to altered levels of amylose content. These varieties are considered more functional than varieties with more normal starch characteristics due to the high swelling power and the colloidal stability of zero- or low-amylose (waxy) starch types and the unique gelling and film-forming properties of high-amylose types[14]. In addition, barley varieties with different starch characteristics tend to be higher in β-glucans and total dietary fibre than varieties with normal starch characteristics[13].

Amylose and β-glucan Levels in Hulless Barley Types		
Barley Type	**Amylose Level (%)**	**β-glucan (%)**
Normal Starch	20-30	4.5-5.0
Zero Amylose	0	8.0-10.0
Low Amylose (Waxy)	1-5	6.0-8.0
High Amylose	30-45	6.0-8.0

Goodness of Barley

Barley ingredients, including pot and pearl barley, barley flour, flakes and grits, can be used to make nutritious and delicious products including side dishes, salads, snacks, hot and cold breakfast cereals, baked goods, pasta and noodles. Besides barley's nutritional advantages, barley also has a great taste. Barley offers versatility along with desirable functional properties, making it a good choice in the creation of healthier-for-you foods.

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