Over the years there have been numerous studies researching the potential health benefits of oats and unique grains. The beneficial role of oats on heart health, specifically β-glucan, a soluble fibre found in oat bran, is of key interest. Research on oats and diabetes, weight management and satiety and antioxidant properties also continues to emerge. Other grains with potential benefits, such as khorasan wheat (also identified as Kamut® khorasan wheat), spelt, quinoa, barley, corn and flax, continue to garner interest as they become more accessible in the Canadian marketplace.

HEART HEALTH BENEFITS OF OATS

The Heart and Stroke Foundation of Canada’s 2011 Report on Canadians’ Health warned that each year about 250,000 potential years of life are lost in Canada due to cardiovascular diseases. The following section highlights current studies showcasing the correlation between oat fibre intake and the reduced risks associated with heart disease.

Recent scientific reviews of literature have been conducted—one spanning the years 1995-2006, reviewing 36 human studies, and the other 2001-2010 examining 30 clinical intervention trials. Both reviews demonstrated a positive relationship between the consumption of 3 - 6 grams per day of oat fibre or β-glucan in decreasing total cholesterol and low-density lipoprotein (LDL) cholesterol. These studies provided β-glucan to individuals either as an additional ingredient in foods or in oat products.

More specifically, healthy individuals showed a significant decrease of total cholesterol and triglycerides after consuming 102 grams per day of oat bran. In normal weight and overweight individuals, two servings per day of oat bran cereal resulted in a significant reduction of LDL - cholesterol and total cholesterol.

In 2010, Health Canada approved and formally recognized a health claim on the relationship between the consumption of β-glucan oat fibre and the reduction of blood cholesterol.

Example: 1/3 cup (30g) of Quaker Oatmeal supplies 40% of the daily amount of the fibre shown to help reduce cholesterol.

Food must contain at least 0.75 g of β-glucan oat fibre per reference amount to be eligible to carry the claim. The daily amount of 3 grams of β-glucan oat fibre leads to a reduction of total and LDL-cholesterol of 5% and 8%, respectively. Sources of β-glucan oat fibre include oat bran, rolled oats and whole oat flour.

DID YOU KNOW?
There are two ways in which β-glucan reduces cholesterol? First by preventing the absorption of dietary cholesterol and secondly by aiding in the removal of LDL cholesterol from circulation.

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Reviewed by: Dr. Koushik Seetharaman, PhD, Associate Professor and Cereal Chair, Department of Food Science, University of Guelph
A growing body of research on oats suggests that it has a positive effect in diabetes, weight management and satiety and antioxidants.

**DIABETES**

Today there are more than 9 million Canadians living with diabetes or elevated blood glucose levels. Oats are thought to play a role in glucose and insulin response levels, as the viscosity generated by β-glucan is thought to delay glucose absorption, resulting in a lower glycemic response.

In fact, 16 out of 29 clinical studies on healthy individuals demonstrated a lower glucose and insulin response after a meal containing oats or β-glucan compared to control subjects. Weickert et al. investigated the effect of oat consumption on insulin sensitivity in overweight and obese women and found an 8% improvement in insulin sensitivity.

In two studies with individuals who had type 2 diabetes, the consumption of whole oat products or β-glucan enriched products resulted in a lower glycemic response that appears to be dose dependent. Similarly, in both healthy and hypercholesterolemic individuals, glucose response after eating was lower following consumption of oat products or β-glucan enriched products.

**WEIGHT MANAGEMENT AND SATIETY**

There have been several studies measuring the effect of oats or β-glucan on weight reduction or increased satiety.

For example, Liatis and Reyna-Villasmil used bread containing 3 g and 7 g of β-glucan respectively in diets of diabetics and obese individuals and found that the groups consuming β-glucan had a greater weight reduction compared to controls. Two other studies using 2.5 – 3 grams of β-glucan found no effect on body weight or energy intake. The viscous texture of β-glucan in the gut may play a role in gastric emptying time, stomach distension and/or the release of appetite regulating peptides throughout the intestine.

Six satiety studies reported increased satiety or changes in satiety related hormones, compared to five that did not when given oat foods or beverages or β-glucan. There is some evidence that β-glucan may have a positive role in weight management and satiety, however more investigation is needed.

**OATS AS ANTIOXIDANTS**

Oxidative stress has been linked to a variety of chronic diseases such as cardiovascular disease, stroke, diabetes and certain cancers. Antioxidants are substances that offer protection against the effects of free radicals, such as cell damage and inflammation. Oats contain a unique group of phenols considered to be antioxidants called avenanthramides. Although limited research has been conducted in this area, a study using avenanthramide extract from oats added to skim milk resulted in the elevation of plasma-reduced glutathione, a measure of antioxidant capacity, compared to controls. More research is needed to understand oats antioxidant and impact on health.

**DID YOU KNOW?**

Oats are higher in protein, calcium and iron than wheat.

**OTHER UNIQUE GRAINS**

The growing interest in healthy living, quality food and culinary variety means unique and ancient grains are receiving more attention from Canadians. Grains are a source of many nutrients, including B-vitamins, iron, folic acid, protein and fibre. In addition, whole grains with their phytochemical compounds have been shown to reduce the risk of coronary artery disease, diabetes and some cancers. Eating Well with Canada’s Food Guide recommends adults consume 6 to 8 servings of grain products every day with half coming from whole grains.

Below are a few grains and seeds, highlighting their nutrients and potential health benefits.

**KHORASAN WHEAT AND SPELT**

Khorasan wheat, also identified as Kamut® khorasan wheat, and spelt are varieties of wheat. They are both considered ancient grains since their origins date back to pre-historic times. Both are more than 17% higher in protein, and considered easier to digest by individuals with allergies than regular wheat. Today these grains are being used in more foods like breads, cereals and snacks.
CORN
Corn is available as both a sweet corn, eaten as a vegetable and as a cereal corn, used as a grain in food products such as tortillas, breakfast cereals and snack bars. Cereal corn, also known as maize, is rich in vitamins A, C and E, carbohydrates, fibre and essential minerals, and contains 9% protein.

DID YOU KNOW?
59% of Canadians want more whole grains/multi-grains in their diet.

BARLEY
Barley is a source of dietary fibre, β-glucan (soluble fibre) and antioxidants. Studies have shown that the cholesterol reducing properties of β-glucan in barley are similar to soluble fibre in oats. A research study providing three levels of β-glucan from barley (either as malt barley, whole barley flour or whole barley flour plus β-glucan extract) in foods showed improved glucose and insulin response after consumption, with the best response evident in the higher β-glucan levels. Similar results were found when β-glucan enriched barley flour was used in cookies or crackers given to healthy volunteers.

QUINOA
Quinoa is a pseudograin, in that it does not grow like grain, but is used like a grain. It is also gluten-free, making it suitable for individuals with celiac disease.

Compared to other grains (e.g. wheat, rice, barley), quinoa has a higher than average protein content, including more lysine—an amino acid that is not available in high concentrations in plant foods. Quinoa can be eaten similar to rice, in a hot breakfast cereal, popped like popcorn or ground into flour for use in snack bars, bread and biscuits.

FLAXSEED
Flaxseed, also known as linseed, is an oilseed crop, and its oil is used as a supplement. This tiny seed’s importance is due to its content of the omega-3 fatty acid α-linolenic acid, fibre, and lignan—a phytoestrogen. A number of studies on these compounds have shown that flaxseed may play a role in reducing the risk of cardiovascular disease, osteoporosis, rheumatoid arthritis and cancer. Complete nutritional benefit requires the flaxseeds to be cracked or ground; however, this increases the risk of rancidity.

FOR YOUR PRACTICE
1. To increase consumption of oat products and receive the benefits of β-glucan, look for the oat fibre health claim on the front of food packages. Products with this claim will help clients meet the daily amount of 3 grams of β-glucan to help lower total and LDL-cholesterol.
2. Look for “whole grain,” “multi-grain,” or “ancient grain” products and check for the Whole Grain Stamp to identify the amount of whole grains. Emerging research shows that these grains offer nutritional and health benefits.

THE BOTTOM LINE
Research supports the beneficial role of oat fibre in heart health, specifically the reduction of total cholesterol and LDL-cholesterol. Studies have also demonstrated a role for oat fibre in the control of diabetes, with decreased postprandial glucose response and improved insulin sensitivity. Although the role of oat fibre in satiety and weight management is still unclear, the physiochemical properties of oat fibre may play a role in weight management through increased satiety. These findings show that including oat fibre in the diet of Canadians can be beneficial to health.

Unique grains, seeds and pseudograins are the subject of emerging research related to both their unique nutritional composition and their role in health. Many of them are a source of phytochemicals, which provide key antioxidant properties. In addition, increasing the consumption of whole grains—from a variety of sources—can decrease the risk of a number of chronic diseases. Further to this, including the aforementioned unique grains and seeds in the diet can make a positive contribution to health.

From PepsiCo Canada. SUMMER 2012
PepsiCo is committed to providing Canadians with a variety of nutritious food choices. Several foods offer the health benefits of oats, unique grains and whole grains. Below is a highlight of breakfast and snack choices.

### IN THE MARKETPLACE

<table>
<thead>
<tr>
<th>FOOD CHOICES</th>
<th>WHOLE GRAINS PER SERVING</th>
<th>GRAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quaker 100% Whole Grain Oats in packets</strong></td>
<td>30 g/30 g servings</td>
<td>• 100% Quaker Oats</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 packet (30 g) supplies 40% of the daily amount of the fibres shown to help reduce cholesterol⁷</td>
</tr>
<tr>
<td><strong>Quaker Oatmeal to go Oats &amp; Honey bars</strong></td>
<td>20 g/40 g serving</td>
<td>• Oats • Whole wheat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 bar (40 g) supplies 30% of the daily amount of the fibres shown to help reduce cholesterol⁷</td>
</tr>
<tr>
<td><strong>Quaker Hearty Medleys instant multigrain Hot Cereal</strong></td>
<td>14 g/36 g serving</td>
<td>• Oats • Rye</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 bar (36 g) supplies 30% of the daily amount of the fibres shown to help reduce cholesterol⁷</td>
</tr>
<tr>
<td><strong>Quaker Harvest Crunch Ancient Grains Cinnamon Apple Almond granola bars</strong></td>
<td>9 g/35 g serving</td>
<td>• Oats • Rye</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 bar (35 g) supplies 30% of the daily amount of the fibres shown to help reduce cholesterol⁷</td>
</tr>
<tr>
<td><strong>Tostitos Artisan Recipes Roasted Garlic &amp; Black Bean tortilla chips</strong></td>
<td>14 g/50 g serving</td>
<td>• Oats • Wheat • Rye • Barley</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 bar (50 g) supplies 30% of the daily amount of the fibres shown to help reduce cholesterol⁷</td>
</tr>
<tr>
<td><strong>SunChips Original Multigrain Snacks</strong></td>
<td>33 g/50 g serving</td>
<td>• Oats • Wheat • Corn • Brown rice • Triticale</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 bar (50 g) supplies 30% of the daily amount of the fibres shown to help reduce cholesterol⁷</td>
</tr>
<tr>
<td><strong>Life Cereal</strong></td>
<td>18 g/30 g serving</td>
<td>• Quaker oats • Corn</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 bar (30 g) supplies 30% of the daily amount of the fibres shown to help reduce cholesterol⁷</td>
</tr>
</tbody>
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**REFERENCES**