

OatWell® oat beta-glucan

Nature's answer to cutting cholesterol

Oat beta-glucan reduces blood cholesterol

Cardiovascular disease (CVD) has been identified by the World Health Organization as the number one cause of mortality globally. High cholesterol is a risk factor in the development of coronary heart disease. The latest research demonstrates that oats and oat beta-glucan can be recommended as part of a healthy diet to reduce the risk of CVD.

Oats are a naturally rich source of beta-glucan. The effect of oat beta-glucan on both serum cholesterol and blood glucose reduction is proven.

Internationally recognized associations, such as the European Society of Cardiology¹ and the US National Cholesterol Education Program, and the recent meta-analysis², support the role of oat beta-glucan, and specifically its viscosity in lowering blood cholesterol levels. It has been established that the consumption of at least 3g per day of oat beta-glucan can achieve a reduction in LDL cholesterol of up to 10% and reduce the risk of CVD by as much as 20%.³



What is OatWell®?

DSM's OatWell® oat beta-glucan is an oat bran powder that is especially high in oat beta-glucan. OatWell® is produced by milling whole oat kernels and contains the natural combination of oat beta-glucan, insoluble fibers and large quantities of protein, unsaturated fatty acids, plus vitamins and minerals.

Globally approved health claims

The European Food Safety Authority (EFSA) has verified the link between reduced blood cholesterol levels and consumption of oat beta-glucan. The European Commission has authorized Article 14 health claims for cholesterol reduction and the associated reduced risk of developing heart disease. The proven efficacy of OatWell® formed the basis of the Article 14 approval.⁴

The other health benefits associated with consuming beta-glucans daily have also received official recognition from EFSA, which issued a positive opinion on the claim linking beta-glucan intake to healthy blood glucose.

Health claims regarding the association between cholesterol-lowering and oat beta-glucan, at least 3g per day, have also been approved by other food agencies worldwide, including the Food and Drug Administration⁵ in the US and Food Standards Australia New Zealand.

“ The evidence presented indicates that the **cholesterol-lowering** effect of oat beta-glucan

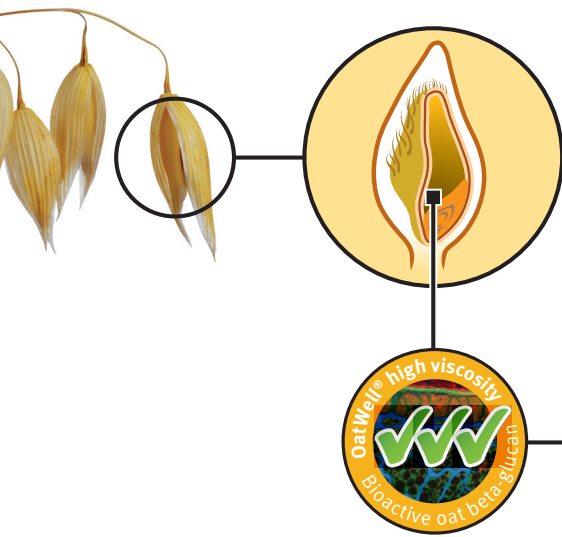
may depend on the

increased viscosity

in the small intestine that

- ✓ reduces the reabsorption of bile acids,
- ✓ increases the synthesis of bile acids from cholesterol and
- ✓ reduces circulating (LDL) cholesterol concentrations. ”

EFSA Journal 2010;8(12):1885



The importance of viscosity in reducing cholesterol

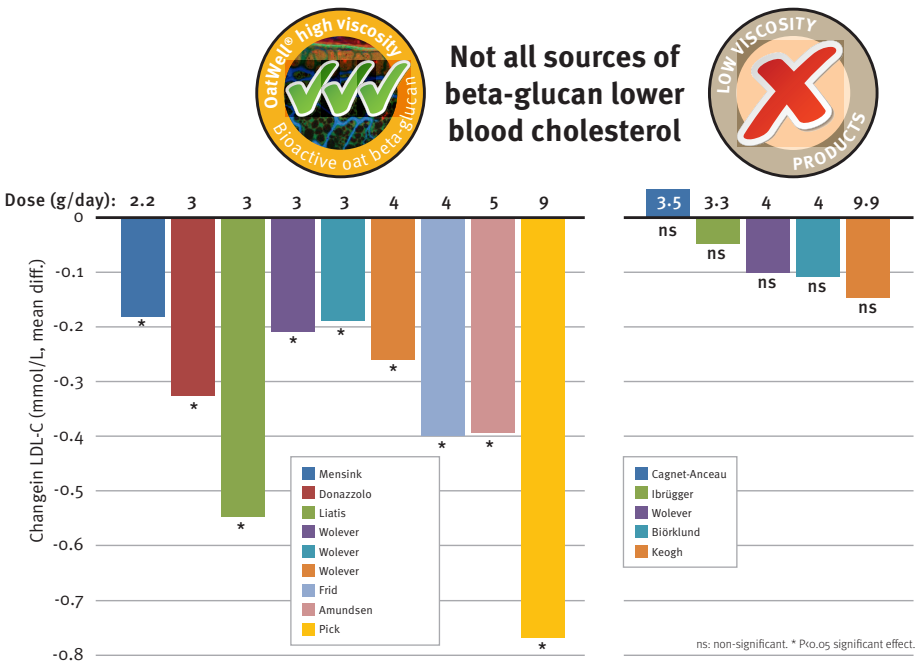


Viscosity / bioactivity ensured by OatWell®:	Viscosity / bioactivity reduced by:
✓ Oat beta-glucan concentration	✗ Extraction processes
✓ Molecular weight	✗ Poor processing control
✓ Solubility	✗ Enzymatic influences
	✗ Excessive heat or pressure

When the beta-glucan in the soluble dietary fibers of the oats is digested, it forms a gel. This makes the contents of the stomach and the small intestine more viscous, so it acts like a net. This 'viscous net' then traps cholesterol-related particles preventing them from being absorbed into the bloodstream. They are then passed, harmlessly, out of the body.

It is the high viscosity of oat beta-glucan that produces this cholesterol-lowering effect. The oat beta-glucan must have a high molecular weight so it can be both viscous and be released from the food matrix during digestion, thereby producing the viscous gel inside the small intestine. This molecular weight can be maintained during the food production process through careful monitoring and control, so that even during processes such as extrusion, there will be no significant loss of molecular weight.

Maintaining high molecular weight and the consequent viscosity is also important in retaining the benefits in controlling glucose and blood sugar levels. The rise in viscosity caused by oat beta-glucan slows down digestion and so acts to prevent sudden fluctuations in blood sugar levels after a meal, effectively delaying the time at which they will return to the pre-meal level.



The viscosity of oat beta-glucan is a key determinant of its effect to reduce cholesterol

New meta-analysis

The latest research on oat beta-glucan confirms the role of viscosity in achieving greater cholesterol-lowering benefits. A meta-analysis recently published in the American Journal of Clinical Nutrition shows that daily consumption of at least 3g oat beta-glucan reduces cholesterol levels and confirms the role of viscosity in achieving greater cholesterol-lowering benefits.² The effect was observed in lean, overweight and obese male and female adults, with and without type 2 diabetes.

The new meta-analysis is the first to have been published in the American Journal of Clinical Nutrition since 1999, since when it has become apparent that the viscosity of oat beta-glucan is a key determinant of its effect to reduce cholesterol and blood glucose in humans. The latest paper only includes studies where the daily dose of oat beta-glucan was 3g or more. Consequently, the results are an accurate estimate of the effect of using oat beta-glucan enriched foods that carry a health claim. A previous meta-analysis⁶ showed that 3g soluble fiber from oats (3 servings of oatmeal, 28g each) led to a decrease of total and LDL cholesterol by <0.13 mmol/L. This new meta-analysis with 3g/day demonstrates a 100 per cent increase in the magnitude of the overall effects with a reduction of up to 0.25 mmol/L.²

OatWell® was the test substance in several of the 28 randomized controlled trials that composed the meta-analysis, while a recent paper published in the British Journal of Nutrition examined the functional properties of oat beta-glucan.⁷ This reviewed a number of studies using OatWell® that demonstrate that high viscosity oat beta-glucan reduces not only cholesterol but also the rise of blood sugar level after eating. This included oat beta-glucan in food matrices such as oat bran and oat bran cereals.

Hear from the author, **Dr. Thomas Wolever**,
Department of Nutritional Sciences, University of Toronto

“We now know more about the importance of physico-chemical properties of oat beta-glucan in determining its ability to reduce cholesterol and blood glucose in humans. Our meta-analysis is the first to take this information into account by only including studies using high molecular weight oat beta-glucan.”

Concentrated goodness of oats:

one serving of bioactive OatWell® has the same amount of beta-glucan as 3–4 portions of traditional oat products



How to benefit from oat beta-glucan

To achieve an intake of 3g per day of oat beta-glucan – the minimum level required to reduce cholesterol – would mean consuming 3 portions of oat cereal* which contains between 420 – 730 kcal.

Alternatively, an individual could drink 750 ml of oat milk, which would also add 338 kcal to the diet – representing more than 13 per cent of the recommended calorific intake for a man, or nearly 17 per cent for a woman.

Yet 11g* of OatWell® contains 3g of oat beta-glucan – and only adds 70 kcal to the diet. OatWell® also produces greater viscosity, so it forms a gel that is superior to either porridge oats or oat milk. Consequently, it is more effective in capturing LDL cholesterol.

OatWell® is available as a powder and is both natural and highly versatile. It can be used in a wide range of drinks and foods such as breads, biscuits, cereals, powder drinks and dietary supplements.

*mixed with skimmed milk.

For more information, search ‘OatWell’ at
www.dsm.com/human-nutrition or e-mail Ruedi.Duss@dsm.com

References:

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- 2 Cholesterol-lowering effects of oat β-glucan: a meta-analysis of randomized controlled trials. *AJCN*. First published ahead of print October 15, 2014 as doi: 10.3945/ajcn.114.086108.
- 3 Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. Executive Summary of the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection.
- 4 EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA). Scientific Opinion on the substantiation of a health claim related to oat beta-glucan and lowering blood cholesterol and reduced risk of (coronary) heart disease pursuant to Article 14 of Regulation (EC) No 1924/2006. *EFSA Journal* 2010;8:1885[15 pp.].
- 5 USA Food and Drug Administration. Health claims: Soluble fiber from certain foods and the risk of coronary heart disease (CHD). Code of Federal Regulations Title 21, Section 101.81. www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/CFRSearch.cfm?fr=101.81 Accessed November 14, 2013.
- 6 Cholesterol-lowering effects of dietary fiber: a meta-analysis 1,2. *The American Journal of Clinical Nutrition*. Accepted for publication July 31, 1998.
- 7 Oat β-glucan: physico-chemical characteristics in relation to its blood-glucose and cholesterol-lowering properties. *British Journal of Nutrition* (2014), 112, S4–S13.

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