Sahlgrenska Academy
at University of Gothenburg
Department of Internal Medicine and Clinical Nutrition

Abstract

Title: The effect of naturally existent beta-glucan in adults with hypercholesterolemia.
- a systematic review with focus on the Swedish food market.

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Background
EFSA states in 2010 that there are good evidence that three grams of beta-glucan/day from oat as a part of a balanced diet, has a positive effect on total cholesterol and LDL.

Objective
Evaluate if there is evidence for primary treatment of lifestyle related hypercholesterolemia with products naturally containing beta-glucan.

Search strategy
In February 2014 the databases PubMed and Scopus were used for article research. The search terms used were; cholesterol level, beta-glucan, hypercholesterolemia, oat and barley.

Selection criteria
Articles, written in Swedish and English, on RCT-studies conducted on otherwise healthy adults with hypercholesterolemia (serum cholesterol >5,0 mmol/L) were included. The intervention product must naturally contain beta-glucan, and an equally product should be retailed in Swedish grocery stores. The control group needed to be supplied with a placebo product and the participants could not be on any lipid-lowering medication. The outcomes were total cholesterol, LDL and HDL.

Data collection and analysis
Four articles met the study criteria and were included in the review. Their study quality was evaluated according to "Mall för kvalitetsgranskning av randomiserade studier" by SBU. The articles had study quality "medium high" and "high". The strength of recommendations was evaluated by using the template "Sammanfattande evidensformulär" by the Sahlgrenska Academy, University of Gothenburg. The articles were given “moderate +++” quality of evidence on all three outcomes.

Main results
467 participants divided on four studies from Sweden, China, USA and Australia. Besides the intervention product participants in three studies were also given the local nutritional counselling for hypercholesterolemia. Three studies had a parallel design whereof one was an Intention to treat. The fourth study was of a crossover design, with a wash-out period just as long as the intervention period. Three articles out of four showed a significant difference in reduction of total cholesterol by 3-6 % and 5-8 % in LDL. Only one study showed a significant difference in HDL—were the intervention group had a smaller reduction than the control group.

Conclusions
Treatment with crushed oatmeal, oatmeal, an oat based beverage or Cheerios (oat) containing a dose of 2,3-3,8g beta-glucan/day gives a reduction in total cholesterol levels by 3-6 % and 5-8 % in LDL levels. (Moderate quality of evidence) The effect of the beta-glucan varies depending on its molecular weight and its solubility, and more research is needed prior to making a statement on the effect in cholesterol levels of any other oat containing products.