Cholesterol Lowering: Foods with added plant sterols

ACNFP

THE ADVISORY COMMITTEE ON NOVEL FOODS AND PROCESSES

EU rules on novel food and novel food ingredients have been in force since 1997. These require all new ingredients to be assessed for safety before they can be placed on the market. Under these rules, approval has been given for the use of plant sterols[1] in a range of foods, including yellow fat spreads, milk drinks and yoghurts, cheese products, and salad dressings. An increasing number of these products are now available throughout the EU, for consumers who wish to lower their cholesterol.

The aim of this fact sheet is to provide consumers with information about plant sterols and their use as cholesterol lowering food ingredients.

What are plant sterols?

Plant sterols occur naturally and are minor components of various plant-derived foods, including vegetable oils, such as rapeseed oil and soybean oil, and nuts, grains and seeds. They are also present in other plant materials such as wood and leaves. The sterols can be extracted from these sources and used as food ingredients.

Plant sterols have a very similar structure to cholesterol. This means that when they are eaten they partially block the uptake of cholesterol from the gastrointestinal tract, thus reducing the cholesterol levels in the blood stream – particularly the more dangerous LDL cholesterol.

1 Note: "plant sterols" is used throughout this fact sheet to refer to phytosterols, phytosterol esters, phytostanols and/or phytostanol esters. These families of chemical compounds have similar structures and properties.

How much plant sterol is effective on cholesterol levels?

The effectiveness of plant sterols in reducing levels of cholesterol has been extensively documented. Studies have shown that regular consumption of 1 to 3 grams of plant sterols per day lowers LDL cholesterol by 5-15%. Scientists have also reported that the benefits of eating plant-derived sterols level out and there is no further reduction in cholesterol at intakes higher than 3 grams per day.

If a consumer discontinues consuming plant sterols at the levels described previously it is possible that their cholesterol levels may rise again.

Risk Assessment

The ACNFP considers that foods with added plant sterols are suitable only for "at risk" groups of the population, namely those who have been advised by their GP or dietician to reduce their blood cholesterol levels by altering their diet. This advice is necessary because plant sterols may also interfere with the absorption of some carotenoids – pigments that are present in many vegetables and fruits, which are essential for the body to make vitamin A. Some people require relatively large amounts of vitamin A, especially children, pregnant women and breastfeeding mothers. They therefore need a good supply of carotenoids so that their bodies are able to make sufficient vitamin A.

The EC Scientific Committee on Food (SCF) reviewed the risk associated with the consumption of plant sterols from multiple dietary sources. Taking into account the benefits of plant sterol consumption and the concerns about the effect that high level of consumption may have on carotenoid absorption, the SCF recommended in September 2002 that the intake of plant-derived sterols should not exceed 3 grams per day.

CHOLESTEROL

Cholesterol is a soft, waxy substance that is present throughout the body at low levels. It is essential to the body as it contributes to the production of vitamin D, bile acids, cell membranes and some hormones. Cholesterol is mainly made in the liver from the saturated fat in food. It is also present in the diet in foods of animal origin, but this makes a smaller contribution to the total. High levels of cholesterol in the blood are associated with an increased risk of coronary heart disease (CHD).

Cholesterol is transported in the body by special carrier proteins in the blood called lipoproteins. There are several types of lipoproteins, high-density lipoproteins (HDL) are able to remove cholesterol from the arteries back to the liver and appear to help protect against the development of fatty deposits. However low density lipoproteins (LDL) are of most concern as they are the major cholesterol carriers in the blood.

Some people, especially middle-aged men, or those who have a diet high in saturated fat, tend to be more at risk from high blood cholesterol levels than others. Such people may need to monitor their cholesterol level and look at ways to reduce it, for example by cutting down on foods that are high in saturated fat, such as biscuits, cakes, pastries, meat pies, sausages, hard cheese, butter and foods containing coconut or palm oil. However, for some people controlling their diet may not be enough. Such people will be recommended by their GP to take lipid-lowering drugs to lower their blood cholesterol level.

Regular physical exercise such as walking, swimming or cycling can also help to reduce cholesterol levels. Please consult your GP if you wish to get further advice on monitoring your cholesterol level.

More information regarding cholesterol is available from:

- The Food Standards Agency: (**www.food.gov.uk**)
- The Scientific Advisory Committee on Nutrition: (**www.sacn.gov.uk**).

The SCF also recommended that the consumption of natural sources of beta-carotene i.e. carotenoid rich fruit and vegetables to counterbalance the potential reduction in vitamin A levels and called for appropriate risk management action to ensure that consumers do not exceed this limit. A new regulation on labelling of foods with added plant sterols was subsequently agreed by Member States (see below).

By limiting the amount of plant-derived sterols in the food, consumers can be assured that they are receiving the greatest cholesterol reducing benefit, without harming their carotenoid uptake and hence their vitamin A levels.

Labelling of food with added plant sterols – Regulation (EC) 608/2004

A new European regulation came into force in April 2004, which requires all foods with added plant sterols to be labelled consistently, so that consumers who wish to lower their cholesterol are fully informed about the appropriate use of these products.

All foods with added plant sterols have to be labelled with the following information:

- They are intended exclusively for those who wish to lower their blood cholesterol.
- Patients on cholesterol lowering medication should only consume them under medical supervision.
- Consumption of plant sterols is not appropriate for people with special dietary needs (i.e. pregnant and breastfeeding women and children under 5).
- Foods with added plant sterols should be consumed as part of a balanced diet.
- Consumption should not exceed 3 grams of added sterols a day.

The regulation also stipulates that manufacturers must clearly define portion sizes.

This regulation provides consumers with consistent information about the presence of added plant sterols in foods and the amounts of these foods that they can consume without exceeding the recommended daily intake of 3 grams.

Further information on the work of the ACNFP can be obtained by contacting the ACNFP Secretariat at the address below:

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Information on the ACNFP is also available at *http://www.food.gov.uk/science/ouradvisors/novelfood*

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