

Plant Sterols and Plant Stanols

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High serum LDL cholesterol (LDL-C) is a risk factor for coronary heart disease. The good news is that some of the foods that you eat can actually reduce LDL-C.

Certain foods such as wheat germ, almonds, broccoli and berries contain plant sterols and plant stanols. These sterols and stanols possess some structural similarities to cholesterol which help to reduce the body's cholesterol absorption in the digestive tract. This can lead to decreased serum LDL-C concentrations.

Research suggests that taking 2 grams of plant sterols and stanols per day can reduce about 10% LDL-C on average. Taking more than 3 grams per day does not seem to have any additional cholesterol lowering benefit.

As plant sterols and plant stanols are found in small amounts naturally in foods, it is challenging to achieve 2 grams per day from natural foods alone. Therefore, some food manufacturers have added them into foods such as margarine and milk in the form of plant stanol esters.

The American Food and Drug Administration (FDA) has acknowledged the GRAS

("Generally Recognised As Safe") status of plant stanol esters. Table 1 shows the plant stanol content in some foods. Values will vary depending on factors such as country of origin, storage conditions, etc.

It is not advisable, however, to overconsume any food or beverage with added plant sterols just to achieve 2 grams of plant sterols per day. This may lead to excessive calorie intake and weight gain, which is not ideal in diabetes or cholesterol management.

Plant sterols and stanols have also been marketed in supplements. However, be cautious when just starting them, as large doses have been associated at times with gastrointestinal symptoms such as nausea and diarrhea.

Plant sterols and stanols should not be used to replace cholesterol-lowering medications. Do let your healthcare provider know if you are taking them.

Although plant sterols may help with lowering LDL-C, do not forget the basics: Reduce intake of saturated and trans fat, increase soluble fibre intake, exercise and maintain a healthy weight!

Table 1: Plant sterols found in some vegetables, fruits and berries

| Food | Total plant sterols per 100g fresh weight of food |
|------------------|---|
| Wheat bran | 0.200g |
| Almond | 0.138g |
| Rolled oats | 0.039g |
| Brussels Sprouts | 0.037g |
| Broccoli | 0.037g |
| Cauliflower | 0.031g |
| Raspberry | 0.027g |
| Blueberry | 0.026g |
| Orange | 0.023g |
| Red Capsicum | 0.022g |
| Grape | 0.020g |
| Apple | 0.018g |
| Kiwi | 0.018g |
| Plum | 0.013g |
| Chinese Cabbage | 0.013g |
| Banana | 0.012g |
| Strawberry | 0.010g |
| Onion | 0.009g |
| Orange juice | 0.009g |
| Lettuce | 0.009g |
| Cucumber | 0.008g |
| Tomato | 0.007g |
| Potato | 0.005g |

Values from Piironen V, Toivo J, Puupponen-Pimia, R. & Lampi A. (2003) Plant sterols in vegetables, fruits and berries, Journal of the Science of Food and Agriculture Vol.83(4) pp.330-337

References:

Piironen et al (2003) 'Plant sterols in vegetables, fruits and berries' Journal of Science of Food and Agriculture, Vol. 83 , 330-337
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