



Review

Plant sterols and plant stanols in the management of dyslipidaemia and prevention of cardiovascular disease [☆][☆]



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[☆][☆] This European Atherosclerosis Society (EAS) Consensus Panel dedicates this Position paper to the memory of Professor Tatu Miettinen, a pioneer in the study of the impact of plant sterols/stanols on cholesterol absorption and homeostasis.

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ABSTRACT

Objective: This EAS Consensus Panel critically appraised evidence relevant to the benefit to risk relationship of functional foods with added plant sterols and/or plant stanols, as components of a healthy lifestyle, to reduce plasma low-density lipoprotein-cholesterol (LDL-C) levels, and thereby lower cardiovascular risk.

Methods and results: Plant sterols/stanols (when taken at 2 g/day) cause significant inhibition of cholesterol absorption and lower LDL-C levels by between 8 and 10%. The relative proportions of cholesterol versus sterol/stanol levels are similar in both plasma and tissue, with levels of sterols/stanols being 500-/10,000-fold lower than those of cholesterol, suggesting they are handled similarly to cholesterol in most cells. Despite possible atherogenicity of marked elevations in circulating levels of plant sterols/stanols, protective effects have been observed in some animal models of atherosclerosis. Higher plasma levels of plant sterols/stanols associated with intakes of 2 g/day in man have not been linked to adverse effects on health in long-term human studies. Importantly, at this dose, plant sterol/stanol-mediated LDL-C lowering is additive to that of statins in dyslipidaemic subjects, equivalent to doubling the dose of statin. The reported 6–9% lowering of plasma triglyceride by 2 g/day in hypertriglyceridaemic patients warrants further evaluation.

Conclusion: Based on LDL-C lowering and the absence of adverse signals, this EAS Consensus Panel concludes that functional foods with plant sterols/stanols may be considered 1) in individuals with high cholesterol levels at intermediate or low global cardiovascular risk who do not qualify for pharmacotherapy, 2) as an adjunct to pharmacologic therapy in high and very high risk patients who fail to achieve LDL-C targets on statins or are statin-intolerant, 3) and in adults and children (>6 years) with familial hypercholesterolaemia, in line with current guidance. However, it must be acknowledged that there are no randomised, controlled clinical trial data with hard end-points to establish clinical benefit from the use of plant sterols or plant stanols.

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