

NATURAL HEALTH PRODUCT

FREE PLANT STEROLS

This monograph is intended to serve as a guide to industry for the preparation of Product Licence Applications (PLAs) and labels for natural health product market authorization. It is not intended to be a comprehensive review of the medicinal ingredient.

Notes

- ▶ Text in parentheses is additional optional information which can be included on the PLA and product label at the applicant's discretion.
- ▶ The solidus (/) indicates that the terms and/or statements are synonymous. Either term or statement may be selected by the applicant.

Date June 3, 2019

Proper name(s), Common name(s), Source material(s)

Table 1. Proper name(s), Common name(s), Source material(s)

Proper name(s)	Common name(s)	Source material(s)	
		Proper name(s)	Part(s)
Free plant sterols	Free plant sterols	▶ <i>Arachis hypogaea</i>	Whole plant
		▶ <i>Brassica napus</i>	
		▶ <i>Glycine max</i>	Seed
		▶ <i>Gossypium herbaceum</i>	
▶ <i>Helianthus annuus</i>			
Free plant sterols	Free plant sterols	▶ <i>Olea europaea</i>	Whole plant
		▶ <i>Secale cereal</i>	
		▶ <i>Triticum aestivum</i>	
		▶ <i>Zea mays</i>	

References: Proper name: EC 2002, FDA 2001; Common name: EC 2002, FDA 2001; Source materials: USDA 2019, EC 2002, Kerckhoffs et al. 2002, FDA 2001.

Route of administration

Oral

Dosage form(s)

This monograph excludes foods or food-like dosage forms as indicated in the Compendium of Monographs Guidance Document.

Acceptable dosage forms for the age category listed in this monograph and specified route of administration are indicated in the Compendium of Monographs Guidance Document.

Use(s) or Purpose(s)

- ▶ Helps lower blood total and low density lipoprotein (LDL) cholesterol (Lau et al. 2005, Thomsen et al. 2004, FDA 2001).
- ▶ Helps maintain healthy cholesterol levels (Lau et al. 2005, Thomsen et al. 2004, FDA 2001).

Dose(s)

Subpopulation(s)

Adults 18 years and older

Quantity(ies)

0.74 - 3 grams of Free plant sterols per day, including at least 80 % of Combined beta-Sitosterol, Campesterol and Stigmasterol, per day (FDA 2018, Lau et al. 2005, Thomsen et al. 2004, EC 2002, Kerckhoffs et al. 2002, FDA 2001).

Direction(s) for use

Take with food (FDA 2018, Lau et al. 2005, Thomsen et al. 2004, FDA 2001).

Duration(s) of use

No statement required.

Risk information

Caution(s) and warning(s)

Consult a health care practitioner/health care provider/health care professional/doctor/physician prior to use if you are pregnant or breastfeeding.

Contraindication(s)

No statement required.

Known adverse reaction(s)

No statement required.

Non-medicinal ingredients

Must be chosen from the current Natural Health Products Ingredients Database (NHPID) and must meet the limitations outlined in the database.

Storage conditions

No statement required.

Specifications

- ▶ The finished product specifications must be established in accordance with the requirements described in the Natural and Non-prescription Health Products Directorate (NNHPD) Quality of Natural Health Products Guide.
- ▶ The medicinal ingredient must comply with the requirements outlined in the NHPID.

References cited

EC 2002: European Commission. General view of the Scientific Committee on Food on the long-term effects of the intake of elevated levels of phytosterols from multiple dietary sources, with particular attention to the effects on beta-carotene. Health & Consumer Protection Directorate-General. [Accessed 2019 May 14]. Available from: https://ec.europa.eu/food/sites/food/files/safety/docs/sci-com_scf_out143_en.pdf

FDA 2018: Food and Drug Administration. § 101.83 Health claims: plant sterol/stanol esters and risk of coronary heart disease (CHD). [Accessed 2019 May 14]. Available from: <http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/cfrsearch.cfm?fr=101.83>

FDA 2001: Food and Drug Administration, Department of Health and Human Services. Food labeling: health claims; plant sterol/stanol esters and coronary heart disease. Interim final rule; notice of extension of period for issuance of final rule. Federal Register. 66(109):30311-3.

Kerckhoffs DA, Brouns F, Hornstra G, Mensink RP. Effects on the human serum lipoprotein profile of beta-glucan, soy protein and isoflavones, plant sterols and stanols, garlic and tocotrienols. J Nutr. 2002 Sep;132(9):2494-505.

Lau VW, Journoud M, Jones PJ. Plant sterols are efficacious in lowering plasma LDL and non-HDL cholesterol in hypercholesterolemic type 2 diabetic and nondiabetic persons. *American Journal of Clinical Nutrition*. 2005 81:1351-8.

Thomsen AB, Hansen HB, Christiansen C, Green H, Berger A. Effect of free plant sterols in low-fat milk on serum lipid profile in hypercholesterolemic subjects. *Eur J Clin Nutr*. 2004 Jun;58(6):860-70.

USDA 2019: ARS, National Genetic Resources Program. Germplasm Resources Information Network (GRIN). National Germplasm Resources Laboratory, Beltsville (MD). [Accessed 2019 May 14]. Available from: <https://npgsweb.arsgrin.gov/gringlobal/taxon/taxonomysimple.aspx>

References reviewed

Chen JT, Wesley R, Shamburek RD, Pucino F, Csako G. 2005. Meta-Analysis of Natural Therapies for Hyperlipidemia Plant Sterols and Stanols versus Policosanol for Hyperlipidemia. *Pharmacotherapy*. 25: 171-183.

Clifton PM, Noakes M, Sullivan D, Erichsen N, Ross D, Annison G, Fassoulakis A, Cehun M, Nestel P. 2004. Cholesterol-lowering effects of plant sterol esters differ in milk, yoghurt, bread and cereal. *European journal of clinical nutrition*. 58: 503-509.

Davidson, MH, Maki KC, Umporowicz DM, Ingram KA, Dicklin MR, Schaefer E, Lane RW, McNamara JR, Ribaya-Mercado JD, Perrone G, Robins SJ, Franke WC. Safety and Tolerability of Esterified Phytosterols Administered in Reduced-Fat Spread and Salad Dressing to Healthy Adult Men and Women. 2001 *Journal of the American College of Nutrition*. 20: 307-319.

de Jong A, Plat J, Bast A, Godschalk RW, Basu S, Mensink RP. *Eur J Clin Nutr*. Effects of plant sterol and stanol ester consumption on lipid metabolism, antioxidant status and markers of oxidative stress, endothelial function and low-grade inflammation in patients on current statin treatment. 2008 Feb;62(2):263-73

Goldberg AC, Ostlund RE Jr, Bateman JH, Schimmoeller L, McPherson TB, Spilburg CA. Effect of plant stanol tablets on low-density lipoprotein cholesterol lowering in patients on statin drugs. *Am J Cardiol*. 2006 Feb 1;97(3):376-9.

Hallikainen M, Lyyra-Laitinen T, Laitinen T, Moilanen L, Miettinen TA, Gylling H. Effects of plant stanol esters on serum cholesterol concentrations, relative markers of cholesterol metabolism and endothelial function in type 1 diabetes. *Atherosclerosis*. 2008 Aug;199(2):432-9.

Hendriks HF, Brink EJ, Meijer GW, Princen HM, Ntanios FY. 2003. Safety of long-term consumption of plant sterol esters-enriched spread. *European journal of clinical nutrition*. 57: 681-692.



Hendriks HFJ, Weststrate JA, Vliet T, Meijer GW. 1999. Spreads enriched with three different levels of vegetable oil sterols and the degree of cholesterol lowering in normocholesterolaemic and mildly hypercholesterolaemic subjects. *European journal of clinical nutrition*. 53:319-327.

Joint FAO/WHO expert committee on food additives. Sixty-ninth meeting Rome, Italy, 17-26 June 2008. Summary and Conclusions; Issued 4 July 2008. [Accessed 2015 January 5]. Available from: http://www.everstevia.com/jecfa69_final.pdf

Weststrate JA, Meijer GW. 1998. Plant sterol-enriched margarines and reduction of plasma total- and LDL-cholesterol concentrations in normocholesterolaemic and mildly hypercholesterolaemic subjects. *European journal of clinical nutrition*. 52:334-343.